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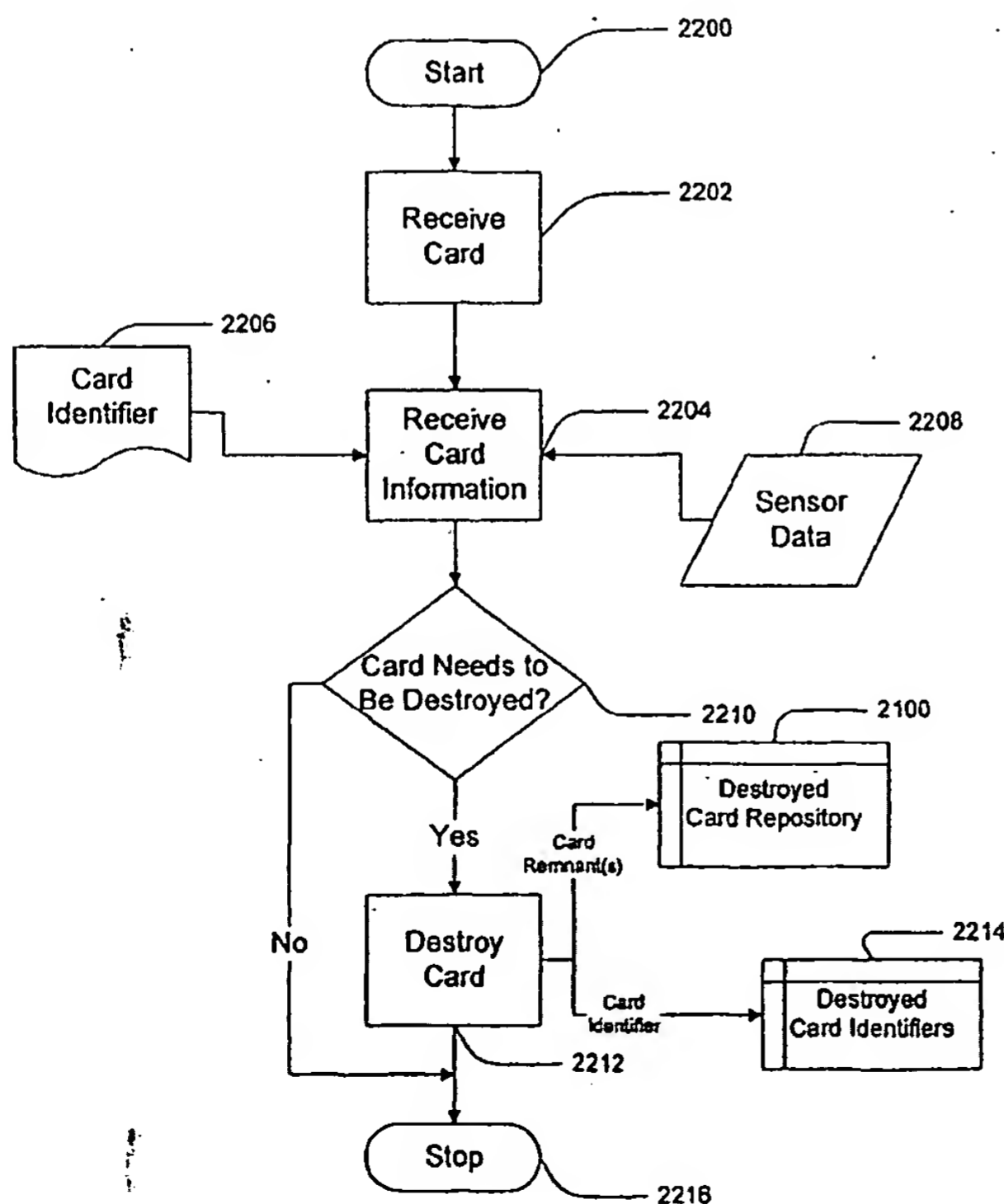
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(54) Title: **REWRITABLE CARD PRINTER FOR A GAMING MACHINE**



(57) Abstract: A rewritable card printer useful as a gaming printer. The rewritable card printer includes a print module coupled to one or more separate card magazines, each having independent card drives. A printer controller controls the operation of the print module and the one or more card magazines. Either a card magazine or the print module may include a card-destroying device. The rewritable card printer may be instructed to identify a particular rewritable card during processing and destroy the identified card. The rewritable card printer may also determine that a card should be destroyed because the card is no longer usable. Once the card is destroyed, its remnants are deposited in a destroyed card repository or trash bin associated with a gaming machine.

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REWRITABLE CARD PRINTER FOR A GAMING MACHINE

5 CROSS-REFERENCE TO RELATED APPLICATION

This application is a continuation-in-part of U.S. Patent Application No. 10/654,521 entitled "REWRITABLE CARD PRINTER" and is related to U.S. Patent Application entitled "PAPER MOTION DETECTOR IN A GAMING MACHINE", attorney docket number 50820/FLC/F392 filed August 12, 2003, U.S. Patent Application Entitled "GAMING MACHINE PRINTER", attorney docket number 49970/FLC/F392 filed July 9, 2003, and U.S. Patent Application No. Application No. 10/136,897, filed April 30, 2002, and the contents of each are hereby
10
15 incorporated by reference as if stated herein in full.

BACKGROUND OF THE INVENTION

This invention relates generally to gaming printers and more specifically to printers for use in cashless gaming machines that use rewritable cards.
20

The gaming machine manufacturing industry provides a variety of gaming machines for the amusement of gaming machine players. An exemplary gaming machine is a slot machine. A slot machine is an electro-mechanical game wherein chance or the skill of a player determines the outcome of the game. Slot machines are usually found in casinos or other more informal gaming establishments.
25

Gaming machine manufacturers have more recently introduced cashless enabled games to the market and these have begun to find wide acceptance in the gaming industry. Cashless enabled games are so named because they can conduct financial exchanges using a mixture of traditional currencies and rewritable cards. Typically, a cashless enabled game has a gaming printer to produce rewritable cards and a rewritable card reader that supports automatic reading of rewritable cards. To coordinate the activities of multiple cashless enabled games, one or more cashless enabled games may be electronically coupled to a cashless
30
35

1 enabled game system that controls the cashless operations of
a cashless enabled game.

When a player cashes out using a cashless enabled game
coupled to a cashless enabled game system, the cashless
5 enabled game signals the system and the system may determine
the type of pay out presented to the player. Depending on
the size of the pay out, the cashless enabled game system
may cause the cashless enabled game to present coins in the
traditional method of a slot machine, or the cashless
10 enabled game system may cause a gaming printer in the
cashless enabled game to produce a rewritable card for the
value of the pay out. The rewritable card may then be
redeemed in a variety of ways. For example, the rewritable
card may be redeemed for cash at a cashier's cage or used
15 with another cashless enabled game. In order to use the
rewritable card in a cashless enabled game, the rewritable
card is inserted into a rewritable card reader of another
cashless enabled game at a participating casino and the
cashless enabled game system recognizes the rewritable card,
20 redeems the rewritable card, and places an appropriate
amount of playing credits on the cashless enabled game.

Cashless enabled games have found an increasing
acceptance and use in the gaming industry, both with players
who enjoy the speed of play and ease of transporting their
25 winnings around the casino and casinos who have realized
significant labor savings in the form of reduced coin hopper
reloads in the games, and an increase in revenue because of
the speed of play. Practical field experience with printers
used in cashless enabled games has illustrated that there
30 are areas for improvement in the current printer designs and
implementation. These areas in need of improvement include
methods and means for using rewritable card media for
printing of vouchers.

35 SUMMARY OF THE INVENTION

A rewritable card printer useful as a gaming printer is
provided. The rewritable card printer includes a print
module coupled to one or more separate card magazines, each

1 having independent card drives. A printer controller
controls the operation of the print module and the one or
more card magazines. Either a card magazine or the print
module may include a card-destroying device. The rewritable
5 card printer may be instructed to identify a particular
rewritable card during processing and destroy the identified
card. The rewritable card printer may also determine that a
card should be destroyed because the card is no longer
usable. Once the card is destroyed, its remnants are
10 deposited in a destroyed card repository or trash bin
associated with a gaming machine.

In an aspect of the invention, a rewritable card
printer has a card magazine coupled to a print module with
the card magazine including a card-destroying device. A
15 printer controller is electronically coupled to the print
module and the card magazine and has a processor a memory
coupled to the processor. The memory includes program
instructions executable by the processor. Included in the
program instructions are instructions to receive a card and
20 destroy the card using the card-destroying device.

In another aspect of the invention, the card-destroying
device is a mechanical device and destroying the card
further includes cutting the card into a plurality of
remnants.

25 In another aspect of the invention, the card-destroying
device is a thermal erase head and the card includes a
rewritable thermal film. The erase head destroys the card
by heating the card to a temperature that destroys the
rewritable thermal film.

30 In another aspect of the invention, the card-destroying
device is an electromagnetic erase head and the card
includes a rewritable magnetic strip. The rewritable card
printer destroys the card by degaussing the magnetic strip
using the electromagnetic erase head.

35 In another aspect of the invention, the program
instructions further include instructing the rewritable card
printer to read card information from the card and determine
that the card should be destroyed using the card

1 information.

In another aspect of the invention, the program instructions further include instructing the rewritable card printer to receive a card identifier and determine if the
5 card should be destroyed using the card information and the card identifier.

In another aspect of the invention, the card-destroying device is a mechanical device and destroying the card further comprises deforming the card.

10

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features, aspects, and advantages of the present invention will become better understood with regard to the following description, appended claims, and
15 accompanying drawings where:

FIG. 1 is a block diagram of a cashless gaming machine and system in accordance with an exemplary embodiment of the present invention;

FIG. 2a is an illustration of a rewritable card in
20 accordance with an exemplary embodiment of the present invention;

FIG. 2b is an illustration of another portion of a rewritable card in accordance with an exemplary embodiment of the present invention;

FIG. 2c is an illustration of another portion of a rewritable card having a static memory in accordance with an
25 exemplary embodiment of the present invention;

FIG. 3 is a block diagram illustrating a security feature employing capacitive inks in accordance with an
30 exemplary embodiment of the present invention;

FIG. 4 is a block diagram of a security feature utilizing an optical signature in accordance with an exemplary embodiment of the present invention;

FIG. 5 is a block diagram of a security feature using
35 randomly deposited radio wave sensitive fibers embedded in a rewritable card in accordance with an exemplary embodiment of the present invention;

FIG. 6 is a block diagram of the operation of a

1 rewritable card printer in accordance with an exemplary
embodiment of the present invention;

5 FIG. 7a is a block diagram of a rewritable card printer
in accordance with an exemplary embodiment of the present
invention;

FIG. 7b is an architecture diagram of a rewritable card
printer employing components having integral controllers in
accordance with an exemplary embodiment of the present
invention;

10 FIG. 8 is an isometric view of a rewritable card
printer in accordance with an exemplary embodiment of the
present invention;

15 FIG. 9 is an isometric view of a rewritable card
printer with the card magazine opened in accordance with an
exemplary embodiment of the present invention;

FIG. 10 is a top plan view of a rewritable card printer
in accordance with an exemplary embodiment of the present
invention;

20 FIG. 11a is side elevation view of a rewritable card
printer in accordance with an exemplary embodiment of the
present invention;

FIG. 11b is side elevation view of a rewritable card
charging process in accordance with an exemplary embodiment
of the present invention;

25 FIG. 11c is a side elevation view of a rewritable card
printer with a card magazine having two independent magazine
card drives in accordance with an exemplary embodiment of
the present invention;

30 FIG. 11d is a side elevation view of a card magazine
having a plurality of card storage locations serviced by a
single card magazine drive in accordance with an exemplary
embodiment of the present invention;

35 FIG. 11e is side elevation view of a rewritable card
printer slidably coupled to a gaming machine in accordance
with an exemplary embodiment of the present invention;

FIG. 12 is a process flow diagram of a rewritable card
printing process in accordance with an exemplary embodiment
of the present invention;

1 FIG. 13 is a process flow diagram of a card escrowing process used by a rewritable card printer in accordance with an exemplary embodiment of the present invention;

5 FIG. 14 is a card retrieval process used by a rewritable card printer having companion magazines in accordance with an exemplary embodiment of the present invention;

10 FIG. 15 is a process flow diagram of a card location process used by a rewritable card printer having multiple card magazines in accordance with an exemplary embodiment of the present invention;

 FIG. 16 is a process flow diagram of a card replacement process in accordance with the present invention;

15 FIG. 17 is a process flow diagram of a programming process using a rewritable card in accordance with an exemplary embodiment of the present invention;

 FIG. 18 is a process flow diagram of a card information storage process in accordance with an exemplary embodiment of the present invention;

20 FIG. 19 is a process flow diagram of a card information retrieval process in accordance with an exemplary embodiment of the present invention;

25 FIG. 20 is a stored card status printing process in accordance with an exemplary embodiment of the present invention;

 FIG. 21 is a side elevation view of a rewritable card printer, a card magazine, and a destroyed card repository in accordance with an exemplary embodiment of the present invention; and

30 FIG. 22 is a process flow diagram of a card destruction process in accordance with an exemplary embodiment of the present invention.

DETAILED DESCRIPTION

35 FIG. 1 is a block diagram of a cashless enabled gaming machine coupled to a rewritable card printer in accordance with an exemplary embodiment of the present invention. A cashless gaming system includes a cashless gaming system

1 controller 100 hosted by a system host 102 coupled 104 to
one or more cashless enabled games 106. A cashless enabled
game includes a game controller 108 that controls the
operation of the cashless enabled game. The game controller
5 is coupled to a rewritable card printer 110. The cashless
enabled game uses the rewritable card printer to write
rewritable card media such as rewritable card 114. The
rewritable card printer includes card identification and
printing algorithms 113 used in conjunction with rewritable
10 cards. The rewritable card includes the cash-out
information for a player.

The rewritable card printer may also be coupled (112)
to the host system and cashless gaming controller. The
rewritable card may be redeemed (116) in a variety of ways.
15 The rewritable card may be redeemed by a human cashier or
card reader 122 at a game table 124, or a human cashier or
card reader 126 at a cashier's cage or kiosk 128, or by a
card reader 118 at another cashless enabled game 120.
Redemption is only possible after the rewritable card passes
20 a verification of account information 130 and validation
using security features 132 included in the rewritable card.

FIG. 2a is an illustration of a rewritable card in
accordance with an exemplary embodiment of the present
invention. The rewritable card shown is produced from
25 commands issued by the cashless enabled game to the gaming
printer in response to a player's request to cash-out. The
rewritable card 114 includes features such as a validation
number, printed in both a human readable form such as a
character string 200 and in a machine-readable form such as
30 a bar code 202, time and date stamps 204, cash-out amount
206, casino location information 208, cashless enabled game
identifier 210, and an indication of an expiration date 212.
Included in the card is a security feature 132 that may take
one or more forms as discussed below.

35 In one rewritable card media in accordance with an
exemplary embodiment of the present invention, one face of
the rewritable card includes a layer of writable and
erasable thermally sensitive film. The thermal film becomes

1 opaque at one temperature level but becomes transparent at
another temperature. This effect can be used to create a
thermally rewritable card.

5 FIG. 2b is an illustration of another side of a
rewriteable card in accordance with an exemplary embodiment
of the present invention. The rewriteable card 114 may also
include a read/write magnetic strip 214 for encoding of any
of the information described above.

10 In addition, the magnetic strip may be used to transmit
information to the rewritable card printer. For example,
the magnetic strip may encode instructions such as
configuration flags or programming instructions used to
reconfigure or reprogram a rewritable card printer.

15 FIG. 2c is an illustration of another portion of a
rewriteable card having a static memory in accordance with
an exemplary embodiment of the present invention. The
rewriteable card 114 may also include a static memory 216
embedded in the rewritable card so that the rewritable card
can be used as a "smart" card for encoding of any of the
20 information described above.

25 In addition, the static memory may be used to transmit
information to the rewritable card printer. For example,
the static memory may encode instructions such as
configuration flags or programming instructions used to
reconfigure or reprogram a rewritable card printer.

30 FIG. 3 is a block diagram illustrating a security
feature employing capacitive inks in accordance with an
exemplary embodiment of the present invention. A rewritable
card 114 may be imprinted with metallic inks to create one
or more capacitors in the rewriteable card. The one or more
capacitors may be used to create a security feature in the
form of a capacitor structure 300 whose capacitance may be
detected by a capacitance sensor 302 coupled to the
rewritable card. As the card moves across the sensor (as
35 indicated by arrow 304) the sensor senses changes in the
localized capacitance of the card and generates (306) a
security signature signal 308 corresponding to the structure
of the capacitor structure 300 in the rewritable card. This

1 security signature signal may be used to identify each
rewritable card used in a cashless enabled gaming system.

FIG. 4 is a block diagram of a security feature
utilizing an optical signature in accordance with an
5 exemplary embodiment of the present invention. To use this
security feature, a rewritable card 114 includes a structure
400 having a variable optical density or optical
reflectivity that is not apparent under normal lighting
conditions. However, when a high intensity light, such as a
10 laser beam 402 generated by a laser diode 404 or other laser
beam generating device, is transmitted through the
rewritable card, a light sensor 406 may detect fluctuations
in the intensity of the transmitted or reflected laser beam
caused by the structure. If the card is moved past the
15 laser beam (as indicated by arrow 408) the moving structure
generates a changing light signal that is received by the
light sensor. In response to the changing light signal, the
light sensor generates (410) a time varying security
signature signal 412 that may be used as a signature to
20 uniquely identify each rewritable card used in a cashless
gaming system.

FIG. 5 is a block diagram of a security feature using
randomly deposited radio wave sensitive fibers or inks
embedded in a rewritable card in accordance with an
25 exemplary embodiment of the present invention. A rewritable
card 114 may include a layer of randomly deposited radio
wave sensitive fibers 500 embedded within the card. An
excitor 502 is used to transmit short pulses of radio waves
504 into the layer of fibers. In response to the radio
30 waves, the fibers generate a resultant radio frequency
signal 506 that may be detected by a sensor 508. If the
rewritable card is moving (as indicated by direction arrow
509) as the fibers are being excited, the sensor receives a
time varying radio frequency signal generated by the excited
35 and moving fibers. In response to the time varying radio
frequency signal, the sensor generates (510) a time varying
security signature signal 512 that may be used to uniquely
identify each rewritable card in a cashless gaming system.

1 FIG. 6 is a block diagram of the operation of a
rewritable card printer in accordance with an exemplary
embodiment of the present invention. A rewritable card
printer includes a security feature reader 600 for reading a
5 security feature embedded in a rewritable card 114. The
type of security feature reader is dependent on the type of
security features used with the rewritable card. The
security feature reader supplies the appropriate excitation
energy and sensor to generate a security signature signal as
10 previously described.

 The rewritable card printer also includes an erase head
602 for erasing a rewritable card prior to printing on the
rewritable card. The erase head raises the temperature of
the rewritable thermal film to an erasing temperature and
15 any images previously written to the rewritable card are
erased.

 The rewritable card printer also includes a print head
604 for printing on the rewritable card. The print head
raises the temperature of the thermal film on the rewritable
20 card to the writing temperature and indicia are printed onto
the rewritable card as a result.

 The rewritable card printer also includes an optical
scanning device 605 for reading the printed indicia on the
rewritable card. The operation of such a device is more
25 fully detailed in U.S. Patent Application No. 10/136,897,
filed April 30, 2002, the contents of which are hereby
incorporated by reference as if stated herein in full.

 The rewritable card printer also includes a magnetic
strip read/write head 607 for reading from, and writing to a
30 magnetic strip 214 (of FIG. 2) on the rewritable card. In
addition, the erase head may include the capability to erase
or degauss any magnetic strip.

 The rewritable card printer includes a printer
controller 606 operably coupled to the security feature
35 reader. The security feature reader generates a security
signature signal 608 that is transmitted to the printer
controller.

 The printer controller is also coupled to the erase

1 head. The printer controller generates an erase control
signal 612 that is transmitted to the erase head. In
response to the erase head signal, the erase head heats the
rewritable card until all indicia are erased from the
5 rewritable card.

The printer controller is also coupled to the print
head. The printer controller transmits print head control
signals 616 to the print head. In response to the print
head control signals, the print head heats a thermal element
10 for each dot that is to be imaged on the rewritable card.
The print head typically creates dot images to a granularity
of 12 dots per millimeter, each dot image using a separate
thermal element to create a dot image.

The printer controller is also coupled to the optical
15 scanner 605. As the optical scanner scans the printed
indicia on the rewritable card, the optical scanner
transmits scanned signals 617 to the printer controller.

The printer controller is also coupled to the magnetic
strip read/write head 607. The printer controller transmits
20 magnetic strip write signals and receives magnetic strip
read signals to and from (619) the magnetic strip read/write
head.

The printer controller may also be coupled to a static
memory read/write connector 622. The printer controller
25 transmits static memory write signals and receives static
memory read signals to and from (624) the static memory
read/write head.

In one embodiment of a rewritable card printer in
accordance with the present invention, a game controller 108
30 is operably coupled to the printer controller. The printer
controller receives printer control instructions 614,
including card information for writing to the rewritable
card, from the game controller. The printer controller may
also transmit printer status and card identification signals
35 610 to the game controller.

FIG. 7a is a block diagram of a rewritable card printer
in accordance with an exemplary embodiment of the present
invention. A rewritable card printer 110 includes a printer

1 controller 606, a print module 702, and one or more card
magazines 704.

5 The print module includes a print card drive 706 that
moves cards through the print module. The print card drive
is reversible such that a card may be fed through the print
module in more than one direction by the print card drive.
The print card drive includes a card motion sensor 707 for
sensing card movement within the print card drive. A more
detailed discussion of printer media motion detection within
10 a printer is presented in U.S. Patent Application entitled
"PAPER MOTION DETECTOR IN A GAMING MACHINE", attorney docket
number 50820/FLC/F392 filed August 12, 2003, the contents of
which are hereby incorporated by reference as if stated
herein in full. The print drive further includes an
15 embossing detector 709 that may be used to sense when an
embossed item, such as a conventional credit card, is
inserted into the print module. The embossing detector may
be a mechanical device, such as a limit switch, that
contacts an inserted card and detects any embossing. If an
20 embossed card is inserted into the rewritable card printer,
the rewritable card printer may not attempt to write to the
card, only read the card.

The print module further includes a security feature
reading device 600 for reading any security features
25 included in the card. The print module further includes a
print head 604 for writing indicia to the rewritable card
and an erase head 602 for erasing the indicia from the
rewritable card. The print module further includes an
optical scanning device 605 for scanning the indicia printed
30 onto a rewritable card. The print module further includes a
magnetic strip read/write head 607 used to read and write
from and to a rewritable card's magnetic strip. The print
module is removably and electronically coupled to the
printer controller and removably and mechanically coupled to
35 the card magazine.

In operation, the print module receives printer control
signals from the printer controller. In response to the
printer control signals, the print module scans rewritable

1 cards for the presence and value of any security feature in
the rewritable card. As the print module scans the
rewritable card, the security feature reading device
5 generates a previously described security signature signal
that is transmitted to the printer controller. In addition,
the print module thermally prints on the rewritable cards,
and thermally erases the rewritable cards, under the control
of the printer controller. The print module may also
receive a rewritable card from a player and transmit a
10 rewritable card detection signal to the printer controller.

The print module may also include a static memory
read/write connector 622 for coupling to a "smart" card
having a readable/writable static memory. The printer
controller transmits static memory write signals and
15 receives static memory read signals to and from the static
memory read/write head.

The one or more independently controlled card magazines
store rewritable cards and provide the rewritable cards to
the printer module on command from the printer controller.
20 Each card magazine may include one or more magazine card
drives 710 for moving cards into and out of the magazine.
Each card magazine also includes a card storage area 712 for
storage of rewritable cards. In operation, the card
magazine receives card magazine control signals from the
25 printer controller. In response to the control signals, the
card magazine feeds cards to the printer from the card
storage area using the magazine card drive. In response to
the card magazine control signals, the card magazine may
also receive rewritable cards from the print module and
30 store the rewritable cards in the card storage area. The
card magazine may also include one or more card sensors 714
used to detect the number of cards stored in the card
storage area. The card sensors sense the quantity of cards
stored in the card storage area and transmit card count
35 signals to the printer controller for further processing.
The card magazine may also include a read/write static
memory 715 for semi-permanent storage of card information
about cards stored in the card magazine.

1 The printer controller includes a processor 716 coupled
to a main memory 718 by a system bus 720. The printer
controller also includes a storage memory 722 coupled to the
processor by the bus. The storage memory stores programming
5 instructions 113, executable by the processor to implement
the features of a rewritable card printer. The storage
memory also includes printer and card information 724 stored
and used by the processor. The printer and card information
includes information received by the printer controller
10 about the status of the print module and card magazine and
also about the status and identity of any cards stored in
the card magazines or being operated on by the print module.
The types of status information may include an image of a
last printed rewritable card as scanned by the optical
15 scanning device and the current status, such as millimeters
of advancement, of a card currently in the print module.

 The printer controller also includes an Input/Output
(I/O) device 726 coupled to the processor by the system bus.
The I/O device is used by the printer controller to transmit
20 control signals to the print module and the card magazine.
The I/O device may also be used by the printer controller to
receive security feature and status signals from the print
module and card magazine.

 One or more communications devices 728 may be coupled
25 to the system bus for use by the printer controller to
communicate with a cashless gaming system host 102 or a game
controller 108 (both of FIG. 1). The printer controller
uses the communication devices to receive commands, program
instructions, and card information from the external
30 devices. In addition, the printer controller may use the
communication devices to transmit printer status information
to the external devices. Other communication devices may
also be used by the printer controller to couple in a secure
fashion over a local area network 732 for administrative or
35 other purposes.

 Additional communication devices and channels may be
provided for communication with other peripheral devices as
needed. For example, one communication device may be

1 provided with a local communications port, accessible from
an exterior of a gaming machine hosting the rewritable card
printer, that a technician may use to communicate with the
printer controller during servicing using an external
5 controller 730. The external controller may communicate
with the printer controller using an infrared link, other
short-range wireless communication link, or a hard link
with an external connector in a secure manner.

The processor may be further coupled to an
10 encryption/decryption module 740 that may be used to encrypt
and decrypt messages encoded using an encryption standard.
This enables the printer controller to engage in secure
transactions with external devices. The processor may
access the display device either as a component through the
15 bus as shown or as an external device through a
communications device using a high level communications
protocol. In addition, the printer controller may also
include program instructions to perform
encryption/decryption services as well.

20 The processor may be further coupled to a display
device 742 that may be used to display printer status
information or card information. For example, the display
may be used to display an "as-scanned" version of the most
recently printed and scanned card. The processor may access
25 the display device either as a component through the I/O
device or as an external device through a communications
device.

In operation, the processor loads the programming
instructions into the main memory and executes the
30 programming instructions to implement the features of a
rewritable card printer as described herein.

As illustrated, the printer controller is shown as
being electronically coupled to the print module and card
magazine without any mechanical coupling. The printer
35 controller may be mounted in a variety of ways and may be
incorporated into various components of either the
rewritable card printer or the game hosting the rewritable
card printer. For example, the printer controller may be

1 attached to and supported by the print module, the card
magazine, or the host game as may be required to
mechanically integrate the rewritable card printer into the
host game.

5 FIG. 7b is an architecture diagram of a rewritable card
printer employing components having integral controllers in
accordance with an exemplary embodiment of the present
invention. A rewritable card printer 110 may be composed of
10 a printer controller 606 that communicates with components
and modules of the rewritable card printer using a
communications link 749. The communications link may use
either serial or parallel communications protocols to
communicate with the components of the rewritable card
printer. In this embodiment a print module 750 includes a
15 print module controller 752 coupled to the printer
controller. To control the operations of the print module,
the printer controller transmits high level commands and
status requests to the print module. In response, the print
module performs the commands and transmits the requested
20 information.

One or more card magazines 754 may also have integral
card magazine controllers that are coupled to the printer
controller via the communications link. To control the
operations of the card magazine, the printer controller
25 transmits high level commands and status requests to the
card magazine. In response, the card magazine performs the
commands and transmits the requested information to the
printer controller.

The internal architecture of the rewritable card
30 printer may be extended to external devices 758 as well,
each having its own internal controller 760. In this
embodiment, the printer controller communicates with the
external device using high-level commands. In response, the
external device performs the commands and transmits any
35 requested information to the printer controller. An example
of an external device having its own internal controller
includes an external card magazine or cassette used to load
cards into, or retrieve cards from, the rewritable card

1 printer.

FIG. 8 is an isometric view of a rewritable card printer in accordance with an exemplary embodiment of the present invention. As illustrated, the rewritable card
5 printer 110 includes a print module 702 and one or more card magazines 704 mechanically coupled on a base 800. The rewritable card printer includes a front bezel 802 through which a rewritable card 114 may be fed by the print module's print card drive 706, either into or out of the rewritable
10 card printer as previously described. The card magazine is positioned on the base such that the card magazine's magazine card drive 710 may feed rewritable cards to and receive rewritable cards from the print module as previously described. The print module and the magazine drive are
15 separately mounted to the base and each may be separately serviced in the field without affecting the operation of the other. In addition, each component may be removed from the rewritable card printer and replaced without removing the power to the rewritable card printer.

20 As the print module and card magazine are separately mounted and controllable, the orientation of the print module and card magazine may be altered as needed to suit the mechanical requirements of a host game. For example the distance between the print module and the card magazine may
25 be altered in order to accommodate a shorter printer bay included in a host game.

In one card magazine in accordance with an exemplary embodiment of the present invention, the cards are stored in the card magazine at an angle, up to 90 degrees, relative to
30 the orientation to a card as it is fed into or out of a print module. This allows the card magazine to accommodate a larger number of cards in a given space, thus enhancing the card magazine's storage capabilities. In operation, the magazine card drive receives the card from the print module
35 or another card magazine and tilts the card as it is added to the card storage area. When a card is retrieved from the card magazine, the magazine card drive reorients the card into a proper position for presentation to the print module.

1 FIG. 9 is an isometric view of a rewritable card
printer with the card magazine opened in accordance with an
exemplary embodiment of the present invention. As
illustrated, the rewritable card printer 110 includes a
5 print module 702 and one or more card magazines 704
mechanically coupled on a base 800. The rewritable card
printer includes a front bezel 802 through which a
rewritable card 114 may be fed by the print module's print
card drive 706, either into or out of the rewritable card
10 printer, as previously described. The card magazine is
positioned on the base such that the card magazine's
magazine card drive 710 may feed rewritable cards to and
receive rewritable cards from the print module as previously
described. The magazine card drive is removably coupled to
15 the card storage area 712 by a hinge 900 such that the
magazine may be opened to allow access to the card storage
area.

A cleaning device 902 (shown through a cutaway in the
front bezel 802) is attached to the print module such that
20 incoming rewritable cards are cleaned before they enter the
print module. The cleaning device may include flexible
solid or bristled wiper elements that contact the card as it
is taken into the print module. The wiper elements may be
conductive so as to remove static surface charges from the
25 card as it moves in the card printer. The wiper elements
may also be charged so as to electrically attract and
collect particles of dust and dirt from the card. As the
print module's print card drive is reversible, the incoming
card may be passed repeatedly, back and forth, through the
30 cleaning element as needed.

In other print modules in accordance with other
exemplary embodiments of the present invention, the cleaning
device may be located within the print module, within the
card magazine, or between the print module and a card
35 magazine. In other rewritable card printers in accordance
with exemplary embodiments of the present invention, the
cleaning device is a separate device and not integrated with
either a print module or a card magazine. Instead, the

1 cleaning device is a separate motorized device similar to a
card magazine and is electronically coupled to a printer
controller.

5 FIG. 10 is a top plan view of a rewritable card printer
in accordance with an exemplary embodiment of the present
invention. The rewritable card printer 110 includes a print
module 702 and one or more card magazines 704a, 704b, and
704c that are mechanically coupled on a base 800. The
10 rewritable card printer includes a front bezel 802 through
which a rewritable card 114 may be fed by the print module's
print card drive 706, either into or out of the rewritable
card printer, as previously described. The plan view also
illustrates a possible relative position of a security
15 feature reading device 600, a print head 604, and an erase
head 602 within the print module. Card magazine 704a is
positioned on the base such that the card magazine's
magazine card drive 710a may feed rewritable cards to and
receive rewritable cards from the print module as previously
described.

20 In the top view, additional positions for card
magazines are illustrated. These additional card magazine
positions may be used to mount one or more card magazines in
various relationships to the print module as may be dictated
by an existing printer bay in a host game. In one possible
25 configuration, a card magazine 704a is located to the side
of the print module. In another configuration, two card
magazines, 704b and 704c, are mounted such that the card
magazines may feed and receive rewritable cards to and from
each other as companions. As illustrated, card magazine
30 704b is the primary card magazine and may feed cards into
and receive cards from the print module. Card magazine 704c
is a secondary card magazine that may feed cards to and
receive cards from the primary card magazine.

35 Card magazines configured so as to allow movement of
cards between the card magazines are herein termed
"companion" magazines. Companion card magazines may be used
to move rewritable cards around such that individual
rewritable cards may be identified and retrieved from

1 storage. This is because a card magazine with a single
magazine card drive may be used as a Last In First Out
(LIFO) rewritable card "memory" where the last rewritable
5 card placed into the card magazine will be the first
rewritable card retrieved from the card magazine when a
rewritable card is requested. Through the use of multiple
magazine drives serving a single rewritable card storage
location, different styles of rewritable card memories may
be implemented such as a First In First Out (FIFO) memory.

10 Companion card magazines may also be used to store
different kinds of rewritable cards for use by the
rewritable card printer. For example, the rewritable cards
may have different permanent graphics imprinted on them
indicating different user affiliations such as affiliations
15 to different loyalty reward programs. In this way, a user
may "upgrade" their affiliations by inserting a first style
of rewritable card into the rewritable card printer and
exchange it for a second style of rewritable card.

FIG. 11a is side elevation view of a rewritable card
20 printer in accordance with an exemplary embodiment of the
present invention. The rewritable card printer 110 includes
a print module 702 and one or more card magazines 704d and
704e mechanically coupled to a base 800. The rewritable
card printer includes a front bezel 802 through which a
25 rewritable card may be fed by the print module's print card
drive 706, either into or out of the rewritable card printer
as previously described. Card magazine 704d is positioned
on the base such that the card magazine's magazine card
drive 710d may feed rewritable cards to and receive
30 rewritable cards from the print module as previously
described.

In the side view, an additional position for a card
magazine is shown as card magazine 704e located beneath card
magazine 704d. This position may be used to mount a card
35 magazine as either a previously described primary or
secondary card magazine. In addition, card magazine 704e
may be replaced by a larger card storage area for card
magazine 704d that extends through the base.

1 FIG. 11b is side elevation view of a rewritable card
charging and retrieval process in accordance with an
exemplary embodiment of the present invention. The
rewritable card printer 110 includes a print module 702 and
5 a card magazine 704 mechanically coupled to a base 800. The
rewritable card printer includes a front bezel 802 through
which a rewritable card may be fed by the print module's
print card drive 706, either into or out of the rewritable
card printer as previously described. Card magazine 704 is
10 positioned on the base such that the card magazine's
magazine card drive 710 may feed rewritable cards to and
receive rewritable cards from the print module as previously
described.

 A technician may use an external controller 730
15 electronically coupled to the rewritable card printer and to
an external card magazine 1112 removable and mechanically
coupled to the rewritable card printer to load rewritable
cards into and retrieve cards, such as escrowed cards, from
the rewritable card printer. This may be done without
20 opening a cabinet in a game hosting the rewritable card
printer. To load cards into the rewritable card printer,
the technician couples the external controller and external
card magazine to the rewritable card printer. The
technician then uses the external controller to send a card
25 load signal to the rewritable card printer and the external
card magazine. In response to the card load signal, the
external card magazine dispenses cards into the rewritable
card printer print module. In response to the card load
signal, the print module accepts the dispensed cards and
30 forwards them to an appropriate internal card magazine in
the rewritable card printer.

 To retrieve cards from the rewritable card printer, the
technician couples the external controller and external card
magazine to the rewritable card printer. In response to the
35 card retrieval signal, the rewritable card printer retrieves
cards from the rewritable card printer's one or more
internal card magazines and dispenses the cards using the
printer module. In response to the card retrieval signal,

1 the external card magazine receives the dispensed cards from the rewritable card printer and stores them.

5 Optionally, the external print controller may store the number of rewritable cards loaded into the rewritable card printer, an identification of each of the rewritable cards loaded into the rewritable card printer, and an identifier of the rewritable card printer.

10 To keep track of the rewritable cards held by the rewritable card printer, the rewritable card printer may receive from the external controller a rewritable card identifier for each card dispensed by the external card magazine. The rewritable card printer may also scan each rewritable card for its identifier as each rewritable card is dispensed into the rewritable card printer.

15 In one rewritable card printer in accordance with an exemplary embodiment of the present invention, the rewritable card printer's printer controller contains all of the program instructions necessary to perform card loading and retrieval operations. In this embodiment, the external
20 card magazine couples electronically with the rewritable card printer's printer controller and the rewritable card printer's printer controller commands the external card magazine to dispense and receive cards. The external controller may also communicate directly to the host game
25 106 or the system host 102.

30 An external controller may be implemented in a variety of different external devices. For example, the external controller may be a purpose-built controller. Other external controllers may be implemented in a programmable device such a Personal Digital Assistant (PDA) or a portable or "laptop" computer.

35 FIG. 11c is a side elevation view of a rewritable card printer with a card magazine having two independent magazine card drives in accordance with an exemplary embodiment of the present invention. The rewritable card printer 110 includes a print module 702 and a card magazine 1100 mechanically coupled to a base 800. The rewritable card printer includes a front bezel 802 through which a

1 rewritable card may be fed by the print module's print card
drive 706, either into or out of the rewritable card printer
as previously described.

5 Card magazine 1100 includes a first magazine card drive
1102 and a second magazine card drive 1104. The card is
positioned on the base such that the card magazine's
magazine card drives may feed rewritable cards, 114a and
114b, to and receive rewritable cards from the print module
using the same card storage area 1106. The first magazine
10 card drive receives and dispenses cards from a first end
1108 of the card storage location. The second card magazine
drive receives and dispenses cards from a second end 1110 of
the card storage location. In this way, the card magazine
may be used as a LIFO card storage device or a FIFO card
15 storage device depending on whether two drives or one drive
are employed. In addition, the magazine card drives may be
used to store cards in the card storage location at an
angle, such as at a 90 degree angle, relative to the
orientation of the card while the card is being operated on
20 by the printer module.

FIG. 11d is a side elevation view of a card magazine
having a plurality of card storage locations serviced by a
single card magazine drive. A card magazine 1112 may have a
plurality of card storage locations, such as card storage
25 locations 1114 and 1116. A single magazine card drive 1118
may service both card storage locations. In this way, a
single card magazine may be used to shuffle cards to locate
specific cards or rotate cards in storage to even out erase
and write cycles performed on the cards.

30 FIG. 11e is side elevation view of a rewritable card
printer slidably coupled to a gaming machine in accordance
with an exemplary embodiment of the present invention. The
rewritable card printer 110 includes a print module 702 and
a card magazine 704 mechanically coupled to a printer base
35 1150. The rewritable card printer includes a front bezel
802 through which a rewritable card may be fed by the print
module's print card drive 706, either into or out of the
rewritable card printer as previously described. Card

1 magazine 704 is positioned on the base such that the card
magazine's magazine card drive 710 may feed rewritable cards
114 to and receive rewritable cards from the print module as
previously described.

5 The printer base is further slidably coupled to a base
plate 1152 that is fixedly coupled to a portion 1154 of a
gaming machine hosting the printer. The rewritable card
printer may be accessed while still in the gaming machine by
sliding the rewritable card printer out of the gaming
10 machine. The card magazine may be mechanically coupled to
the printer base by a quick disconnect 1156 so that the card
magazine may be easily removed. To facilitate easy removal,
the card magazine may be coupled to the printer controller
606 (of FIG. 7a) by a quick disconnect electrical connector
15 1157 that allows the card magazine to be installed, removed,
or exchanged without removing the power to the gaming
machine or rewritable card printer.

The print module may be mechanically coupled to the
printer base by a quick disconnect 1158 so that the print
20 module may be easily removed. To further facilitate easy
removal, the print magazine may be coupled to the printer
controller 606 (of FIG. 7a) by a quick disconnect electrical
connector 1160 that allows the print module to be installed,
removed, or exchanged without removing the power to the
25 gaming machine or rewritable card printer.

In one embodiment of a card magazine, the card magazine
is slidably coupled to the printer base separately from the
print module. In this embodiment, the card magazine may
accessed by sliding the card magazine past the print module
30 so that the card magazine may be separately serviced.

FIG. 12 is a process flow diagram of a rewritable card
printing process in accordance with an exemplary embodiment
of the present invention. During a printing process 1200, a
rewritable card printer receives (1202) rewritable card
35 information such as cash-out value or images to print onto
the rewritable card. The rewritable card printer reads
(1204) any security feature embedded in the rewritable card,
storing the resultant security signature signal in temporary

1 memory. The rewritable card printer generates (1206)
indicia to print onto the rewritable card using the
rewritable card values or images. Additionally, the
rewritable card printer may incorporate all or a portion of
5 security signature signal into the printed indicia as either
a clearly readable value or an encoded value. The
rewritable card printer then optionally erases (1208) the
rewritable card and then prints the indicia onto the
rewritable card prior to dispensing the rewritable card.
10 The rewritable card printer may then transmit (1210) the
security signature signal, either as an encoded value or as
a clearly readable value, to a game host or cashless enabled
system host.

FIG. 13 is a process flow diagram of a card escrowing
15 process used by a rewritable card printer in accordance with
an exemplary embodiment of the present invention. In a card
escrowing process 1300, a rewritable card printer determines
if a card should be removed from service. A card may be
removed from service for a variety of reasons. Rewritable
20 cards have a finite number of erase and write cycles and so
must be removed from service as they age. A card may become
damaged so that it is no longer operable within rewritable
card printer or the rewritable card's security feature is no
longer readable. Cards may also have physical features such
25 as embossing that may require the card to be handled in a
special manner. As the rewritable card printer includes an
optical scanner and can verify if a card was printed
properly immediately after printing the card, the rewritable
card printer may determine that a card was printed in error
30 and may escrow the card. In addition, the rewritable card
printer may receive an identifier for a rewritable card to
be removed from service. In which case, the security
feature in the rewritable card may be readable but
correspond to a card to be removed from service. Another
35 reason a card may be escrowed is that the user is exchanging
one kind of rewritable card for another kind of rewritable
card.

Cards may be removed from service by moving the card

1 into an escrow location within the rewritable card printer
by either a magazine card drive or by a print card drive.
In the escrow process, the rewritable card determines (1302)
if a card should be removed from service. If the rewritable
5 card printer determines that the card should remain in
service (1304), the rewritable card continues processing
(1306) the rewritable card. Otherwise, the rewritable card
printer moves (1306) the rewritable card to an escrow
location 1307 within the rewritable card printer and obtains
10 (1308) a replacement card from a card magazine 1310 and
continues processing (1312) the newly obtained rewritable
card.

FIG. 14 is a card retrieval process used by a
rewritable card printer having companion magazines in
15 accordance with an exemplary embodiment of the present
invention. As noted previously, a card magazine having a
single magazine card drive may be considered as being
similar to a LIFO memory device. As previously noted, a
rewritable printer controller may store information about
20 cards stored in the card magazines. This information may
include where in a card magazine a particular rewritable
card is stored. In this case, a specific card stored in the
card magazines may be retrieved using the following process..

In a card retrieval process 1400, a rewritable card
25 printer receives a request for a specific rewritable card
from an external host or a game controller. The rewritable
card printer receives (1402) the request and determines
(1404) where in the storage areas of the card magazines that
the specific card is located using previously stored card
30 information 704. For the number of cards on top of the
request card, the rewritable card moves (as indicated by
loop structure 1406, to 1410) all of the cards on top of the
requested card into a companion card magazine's storage area
1409. The rewritable card printer then dispenses (1412) the
35 located card. Optionally, the rewritable card printer may
replace all of the moved cards from the companion card
magazine (as indicated by loop structure 1414, 1416, and
1418).

1 FIG. 15 is a process flow diagram of a card location
process used by a rewritable card printer having multiple
card magazines in accordance with an exemplary embodiment of
the present invention. This card location process, 1500,
5 may be used when the rewritable card printer does not keep
an accounting of each writeable card stored in the
rewritable card printer's memory. The rewritable card
printer receives (1502) an identifier for a card to be
located. For each rewritable card stored by the rewritable
10 card printer in a card magazine (as indicated by the loop
structure 1504 to 1514), the rewritable card printer moves
(1506) a rewritable card from a card magazine 1507 into a
read portion of the print module 702 (of FIG. 7) and reads
(1508) an identifier, such as a previously described
15 security feature, from the rewritable card. The rewritable
card printer then compares (1510) the read identifier to the
received identifier. If the comparison indicates that the
requested rewritable card is located, the rewritable card
printer dispenses (1516) the located card. If the
20 comparison indicates that the retrieved rewritable card is
not the requested rewritable card, the rewritable card
printer moves the card into a companion card magazine's
storage location 1409 and continues processing rewritable
card until either the requested card is located or the last
25 of the stored rewritable cards is retrieved.

 Optionally, the rewritable card printer may put all of
the moved rewritable cards back into their original
locations within a card magazine. For each of the moved
cards (as indicated by the loop structure 1518 to 1522) the
30 rewritable card printer retrieves (1520) a moved card out of
the companion storage location and places it back into the
card magazine 1507.

 FIG. 16 is a process flow diagram of a card replacement
process in accordance with an exemplary embodiment of the
35 present invention. A rewritable card printer may include
two or more card magazines as previously discussed. This
feature allows a gaming machine to be used for more
sophisticated transactions than merely accepting wagers,

1 playing games, and printing cash-out cards. Using multiple
card magazines allows a gaming machine to also function as a
customer service kiosk for several types of operations
wherein a player may exchange one type of rewritable card
5 for another during a transaction. An example of such a
transaction is when a player wants to join a loyalty
program.

In a card replacement process 1600, a rewritable card
printer receives (1602) a card from a user for imprinting.
10 The rewritable card printer moves (1604) the received card
into a first card magazine 1606 for storage and possible
reuse. The rewritable card printer then retrieves (1608) a
replacement card from a second card magazine 1610. The
rewritable card printer continues processing (1612) the
15 replacement card such as by printing on the card as
previously described. The rewritable card printer dispenses
(1614) the imprinted replacement card to the user whereby
the user's original card has been replaced with another type
of card.

20 Although this invention has been described in certain
specific embodiments, many additional modifications and
variations would be apparent to those skilled in the art.
It is therefore to be understood that this invention may be
practiced otherwise than as specifically described. Thus,
25 the present embodiments of the invention should be
considered in all respects as illustrative and not
restrictive, the scope of the invention to be determined by
any claims supported by this application and the claims'
equivalents rather than the foregoing description.

30 FIG. 17 is a process flow diagram of a programming
process using a rewritable card in accordance with an
exemplary embodiment of the present invention. A rewritable
card printer may use a rewritable card to load programming
instructions into memory. The rewritable card may include
35 programming instructions in a magnetic strip readable by the
rewritable card's magnetic strip read/write head, or
programming instructions may be included in the printed
indicia on the card and read by an optical scanning device.

1 In a programming process 1700, a rewritable card
printer receives (1702) a card and determines (1704) if the
card includes programming instructions. A rewritable card
5 printer may make the determination by either scanning the
card and parsing the information found on the card or may be
signaled by an external device that the inserted card
includes programming instructions. If the card does have
programming instructions, the rewritable card printer reads
10 (1706) the programming instructions and stores the
programming instructions 113 in the rewritable card
printer's memory 722. After reading the card, the
rewritable card printer dispenses the card 724. In addition
to reading rewritable cards to obtain additional programming
instructions, the rewritable card printer may receive
15 programming instructions from an external device, such as
external controller 730 (of FIG. 7a).

FIG. 18 is a process flow diagram of a card information
storage process in accordance with an exemplary embodiment
of the present invention. A rewritable card printer
20 receives (1802) a card 1804 for storage into a card
magazine. The rewritable card printer reads (1806) card
information from the card. The card information may include
the number of erase/write cycles that the card has gone
through and the unique signature of the card. The
25 rewritable card printer stores (1808) the card information
in static memory 1810. The static memory may be on the card
itself, in a card magazine, or in a static memory location
in the printer controller. Once the card information has
been stored, the writable card printer erases (1812) the
30 card and stores (1814) the erased card in a card magazine
1816.

FIG. 19 is a process flow diagram of a card information
retrieval process in accordance with an exemplary embodiment
of the present invention. A card retrieval process 1900 is
35 used by a rewritable card printer to initiate writing to an
erased card. The card's information, including information
about how many read/write cycles the card has gone through,
is stored in static memory 1810 as previously described.

1 This enables a rewritable card printer to safely store
rewritable cards in an erased mode and still track card
usage in order to determine when a card should be removed
from service.

5 The rewritable card printer retrieves (1902) a card
from a card magazine 1816. The rewritable card printer
reads (1904) the card's signature and uses (1906) the card's
signature to retrieve card information from the static
memory. The rewritable card printer then continues (1908)
10 processing the rewritable card using the retrieved card
information. This may include incrementing the number of
erase/write cycles that the card has gone through onto the
card before dispensing the card. This processing may also
include removing the card from service.

15 FIG. 20 is a stored card status printing process in
accordance with an exemplary embodiment of the present
invention. A rewritable card printer uses a stored card
status printing process 2000 to report on a rewritable card
the status of the rewritable card printer, game host, and
20 rewritable cards stored by the rewritable card printer. The
rewritable card printer receives 2002 a request for printing
a status card. In response to the request, the
rewritable card printer retrieves (2004) a card from the
card magazine 1816. The rewritable card printer retrieves
25 (2006) card information stored in static memory 1810 about
the cards stored by the rewritable card printer. The
rewritable card printer then uses the card information to
generate printable indicia for printing (2008) on the card
and prints the indicia on the card before dispensing it.

30 FIG. 21 is a side elevation view of a rewritable card
printer, a card magazine and a destroyed card repository in
accordance with an exemplary embodiment of the present
invention. A rewritable card printer 110 includes a print
module 702 and one or more card magazines, such as card
35 magazine 704, coupled to a base 800. In this embodiment,
the card magazine may send a destroyed or otherwise
incapacitated rewritable card 114 to a destroyed card
repository 2100. The card magazine further includes a

1 device 2102 used to destroy a rewritable card on command.
Once the card is destroyed, the remnants of the destroyed
card are fed into the destroyed card repository by the card
magazine. The card remnants remain in the destroyed card
5 repository until an attendant removes the card remnants.
The repository may be coupled to the rewritable card printer
and card magazine by the base. In another embodiment, the
repository is similar to a trash bin and is placed in a
position to catch card remnants as the card remnants are
10 ejected from the card magazine. For example, the card
repository may be a bin located beneath the printer in a
body of a gaming machine.

In one embodiment of a card magazine, the card-
destroying device is a mechanical device that cuts or shears
15 a rewritable card or shreds the rewritable card into a
plurality of remnants. For example, the card-destroying
device may include a cutting device such as one or more
cutting wheels or shears that engage a rewritable card as
the rewritable card passes through the card magazine. The
20 cutting device may cut completely through the card and/or
magnetic strip or may simply score the card. If the cutting
device cuts through the card, a plurality of card remnants
are generated and ejected by the card magazine into the
repository. If the card is scored, then only a single card
25 remnant may be generated during the destruction process.

In another embodiment of a card magazine, the card-
destroying device creases or folds the card in order to
destroy the card. In this embodiment, the card remains
intact but may no longer be inserted into a card reader as
30 the card is deformed.

In another embodiment of a print module, the print
module includes a card-destroying device 2104. The type of
card-destroying device is dependent on the type of card the
print module is designed to work with. For example, the
35 card-destroying device may be a mechanical device similar
mechanical device used by a card magazine as previously
described.

In another embodiment of a rewritable card printer in

1 accordance with an exemplary embodiment of the present
invention, an erase head 602 (of FIG. 7a) may be employed as
a card-destroying device. In this embodiment, the erase
head is heated to a temperature high enough to erase any
5 indicia from the card and to permanently destroy the ability
of the card to accept further write operations. An erase
head used as a card-destroying device may be located in
either the print module or the card magazine.

In another embodiment of a rewritable card printer in
10 accordance with an exemplary embodiment of the present
invention, an electromagnetic read/write head 607 (of FIG.
7a) is used to erase or degauss a magnetic strip type
rewritable card. In this embodiment, a magnetic strip on
the rewritable card is erased using the read/write head in
15 order to invalidate the rewritable card. An electromagnetic
read/write head used as a card-destroying device may be
located in either the print module or the card magazine.

FIG. 22 is a process flow diagram of a card
destruction process in accordance with an exemplary
20 embodiment of the present invention. The process starts
(2200) by receiving (2202) a rewritable card. The process
also receives (2204) card information relating to whether or
not the card should be destroyed. The card information may
come from an external device as a command 2206 to destroy an
25 identified card. For example, a player tracking system may
determine that a rewritable card may be being used in a
fraudulent manner. In this case, the player tracking system
may request that the card be destroyed if a printer detects
the card being used. The card information may also be in
30 the form of sensor data 2208 collected by a print module or
a card magazine from a card. For example, the print module
may have attempted to write to the card and been unable to
verify the write operation in which case the card may need
to be destroyed to remove the card from circulation.

35 Using the card information, the process determines
(2210) if the card should be destroyed. If so, the process
destroys (2212) the card and places any card remnants into a
card repository 2100. Additionally, the process stores a

1 card identifier for the destroyed card in a destroyed card
identifier datastore (2214). The destroyed card identifier
datastore may then be queried by other processes to
determine what cards may have been destroyed. The destroyed
5 card identifier may then be reported to an external system
such as a player card tracking system for further
processing. If the card does not need to be destroyed, the
process stops (2216).

Although this invention has been described in certain
10 specific embodiments, many additional modifications and
variations would be apparent to those skilled in the art.
It is therefore to be understood that this invention may be
practiced otherwise than as specifically described. Thus,
the present embodiments of the invention should be
15 considered in all respects as illustrative and not
restrictive, the scope of the invention to be determined by
any claims supported by this application and the claims'
equivalents rather than the foregoing description.

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1 WHAT IS CLAIMED IS:

1. A rewritable card printer, comprising:

a card magazine coupled to a print module, the card magazine including a card-destroying device;

5 a printer controller electronically coupled to the print module and the card magazine, the printer controller comprising:

a processor; and

10 a memory coupled to the processor, the memory having program instructions executable by the processor stored therein, the program instructions comprising:

receiving a card; and

15 destroying the card using the card-destroying device.

2. The rewritable card printer of claim 1, wherein the card-destroying device is a mechanical device and destroying the card further comprises cutting the card into a plurality of remnants.

3. The rewritable card printer of claim 1, wherein the card-destroying device is a thermal erase head, the card includes a rewritable thermal film, and destroying the card comprises heating the card to a temperature that destroys the rewritable thermal film.

4. The rewritable card printer of claim 1, wherein the card-destroying device is an electromagnetic erase head, the card includes a rewritable magnetic strip, and destroying the card comprises degaussing the magnetic strip.

5. The rewritable card printer of claim 1, wherein the program instructions further comprise:

35 reading card information from the card; and

determining that the card should be destroyed using the card information.

1 6. The rewritable card printer of claim 5, wherein the
program instructions further comprise:

 receiving a card identifier; and
 determining that the card should be destroyed
5 using the card information and the card identifier.

7. The rewritable card printer of claim 1, wherein the
card-destroying device is a mechanical device and destroying
the card further comprises deforming the card.

10

8. A rewritable card printer, comprising:

 a print module including a card-destroying device;
 a printer controller electronically coupled to the
print module, the printer controller comprising:

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 a processor; and

 a memory coupled to the processor, the memory
having program instructions executable by the
processor stored therein, the program instructions
comprising:

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 receiving a card; and

 destroying the card using the card-
destroying device.

25 9. The rewritable card printer of claim 8, wherein the
card-destroying device is a mechanical device and destroying
the card further comprises cutting the card into a plurality
of remnants.

30 10. The rewritable card printer of claim 8, wherein the
card-destroying device is a thermal erase head, the card
includes a rewritable thermal film, and destroying the card
comprises heating the card to a temperature that destroys
the rewritable thermal film.

35 11. The rewritable card printer of claim 8, wherein the
program instructions further comprise:

 reading card information from the card; and
 determining that the card should be destroyed

1 using the card information.

12. The rewritable card printer of claim 11, wherein the program instructions further comprise:

5 receiving a card identifier; and
 determining that the card should be destroyed using the card information and the card identifier.

10 13. The rewritable card printer of claim 8, wherein the card-destroying device is a mechanical device and destroying the card further comprises deforming the card.

14. A rewritable card printer, comprising:
 card printing means including a card-destroying
15 device;
 card printer controller configured to:
 receive a card; and
 destroy the card using the card-destroying device.

20 15. The rewritable card printer of claim 8, wherein the card printer controller is further configured to:
 read card information from the card; and
 determine that the card should be destroyed using
25 the card information.

16. The rewritable card printer of claim 11, wherein the card printer controller is further configured to:
 receive a card identifier; and
30 determine that the card should be destroyed using the card information and the card identifier.

35

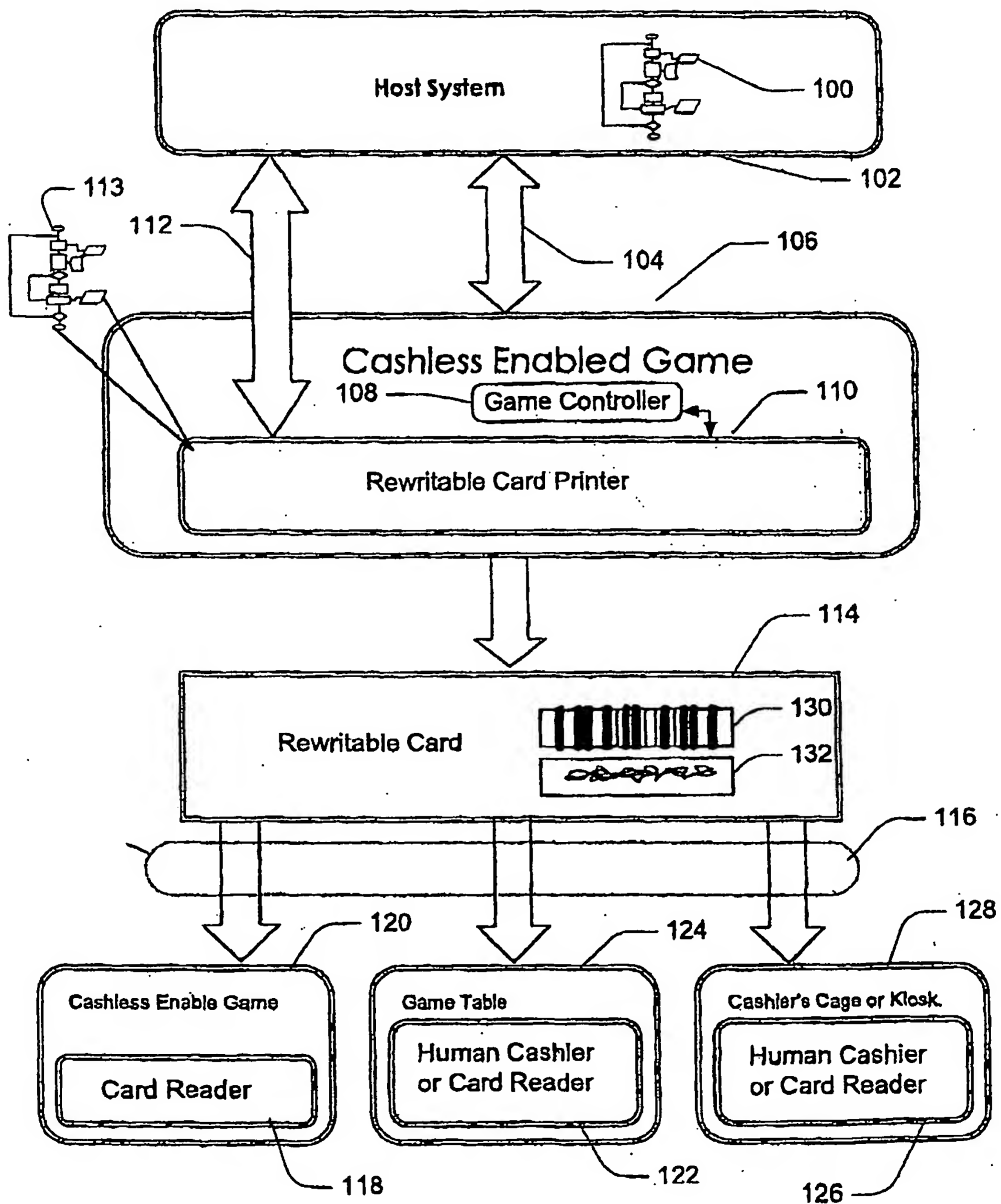


FIG. 1



FIG. 2a

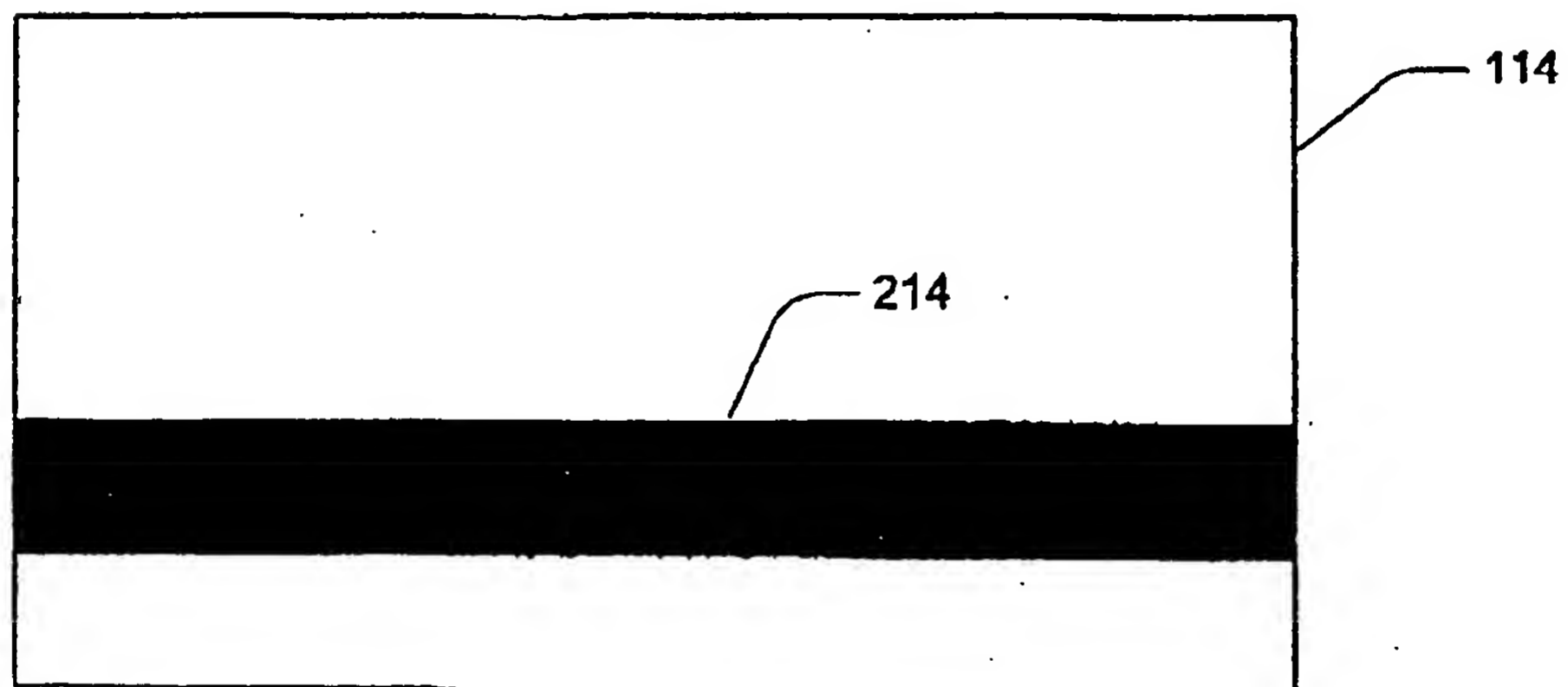


FIG. 2b

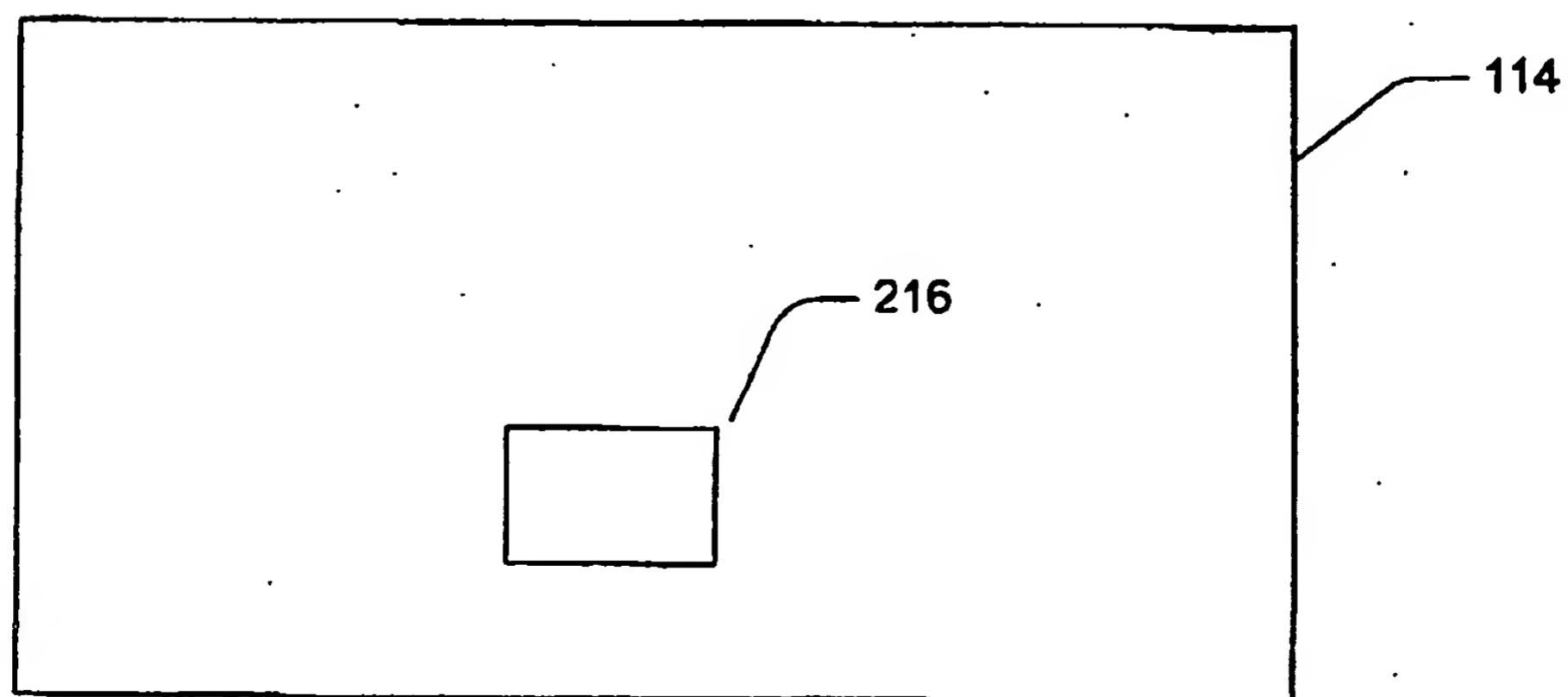
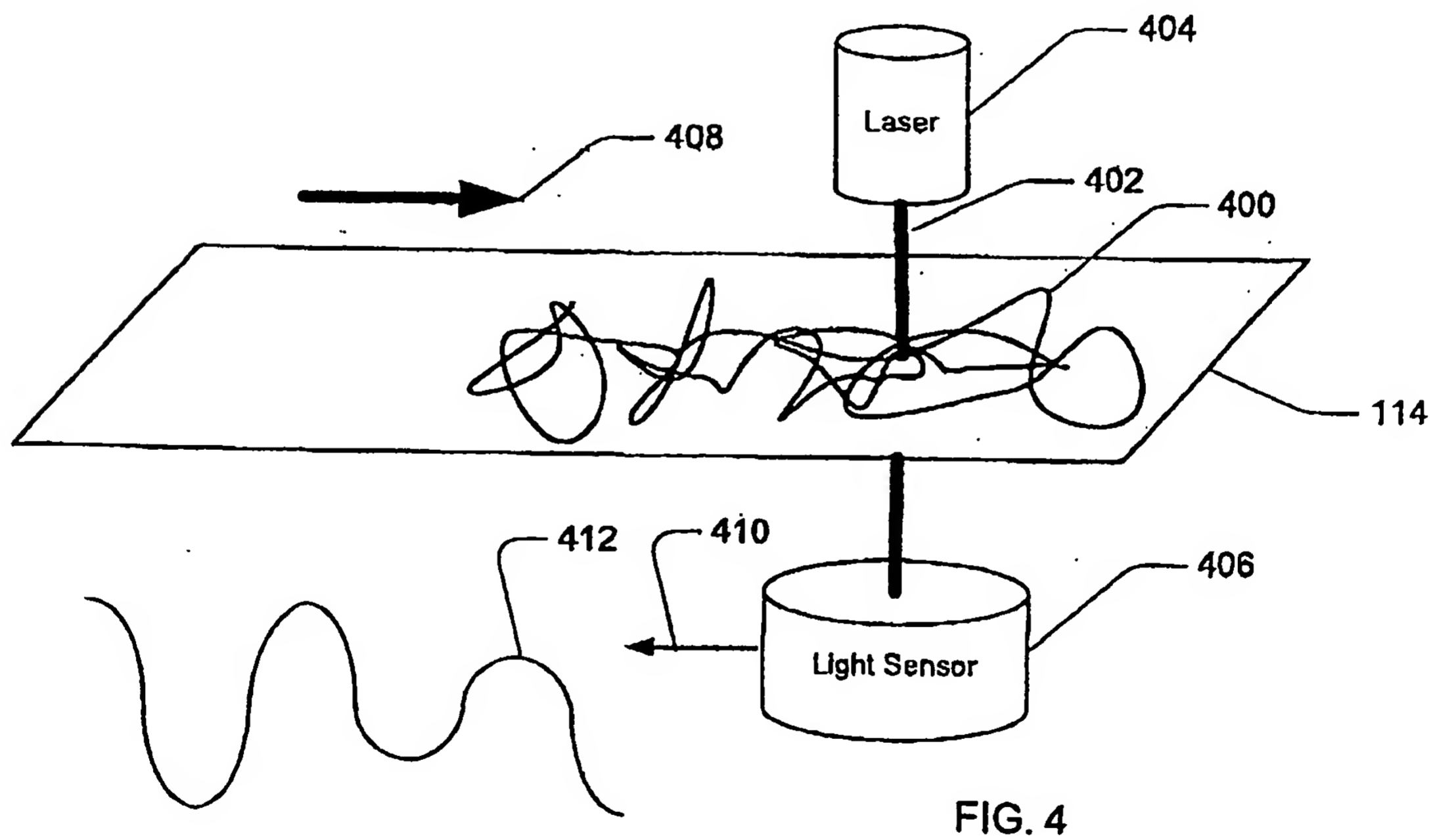
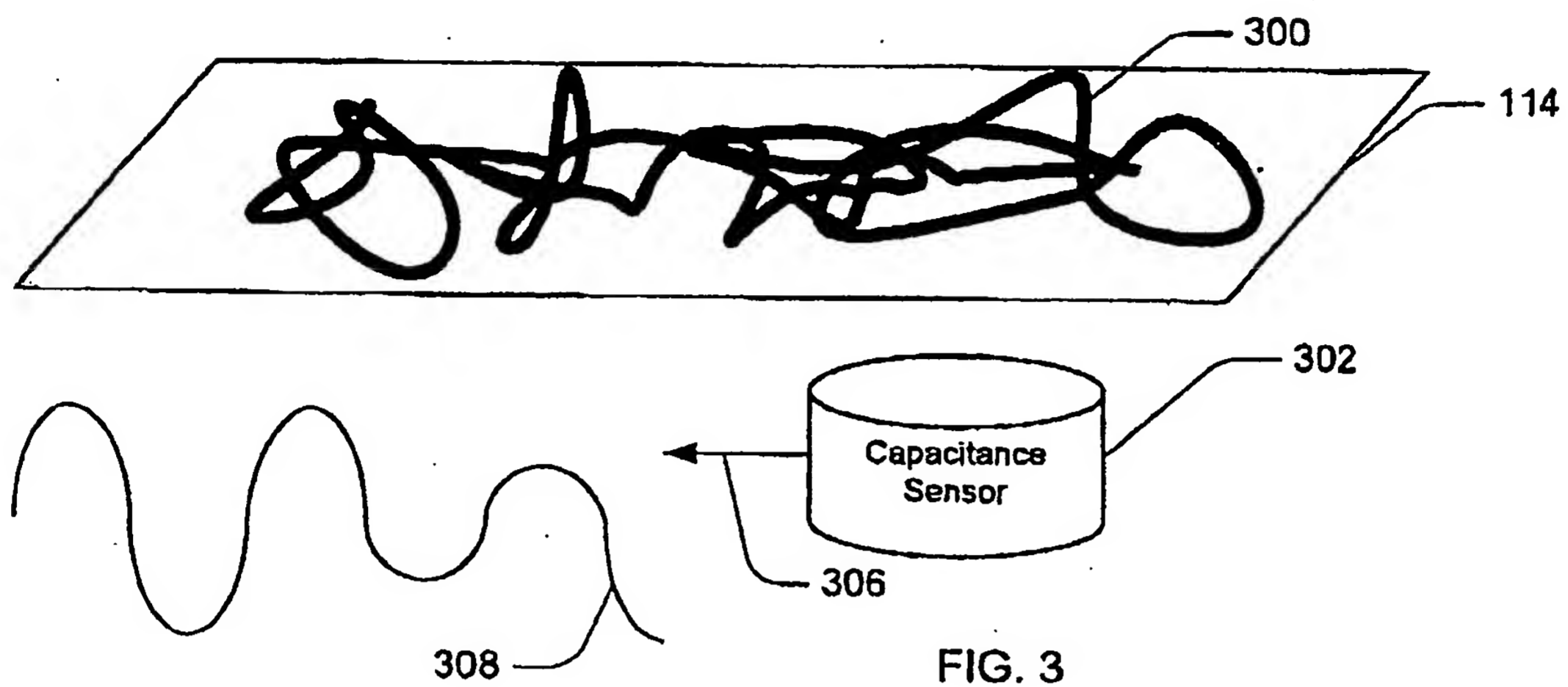


FIG. 2c



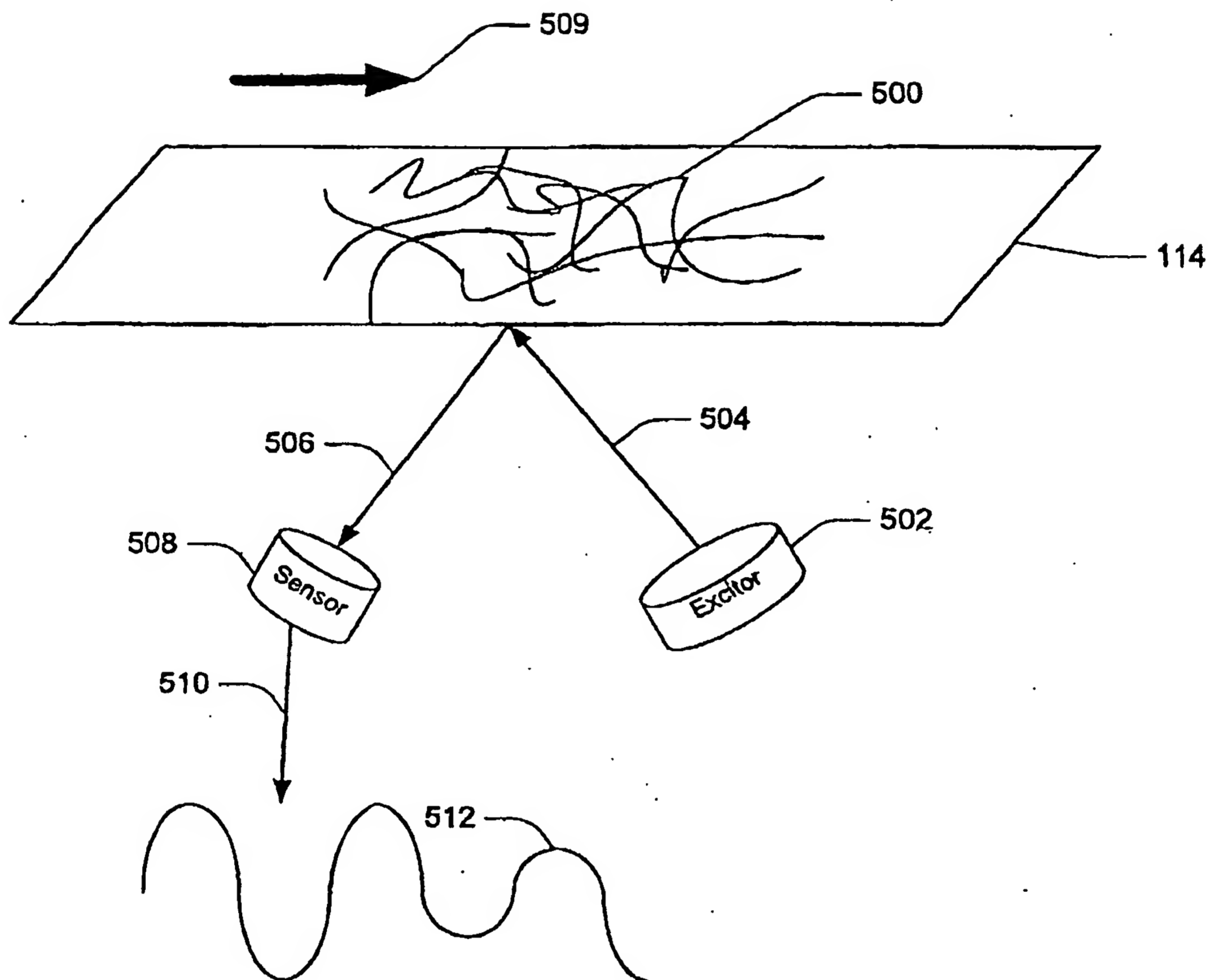


FIG. 5

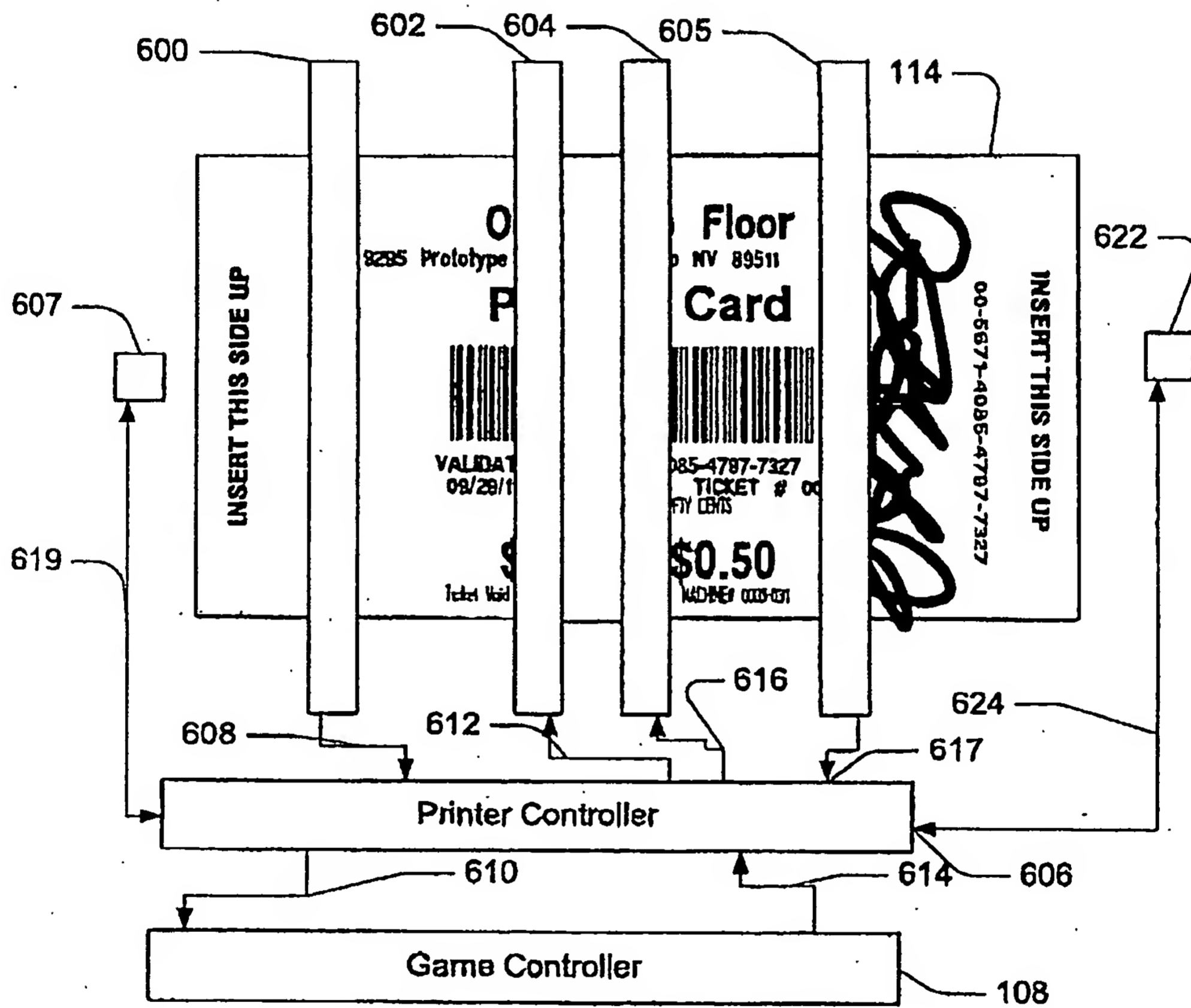


FIG. 6

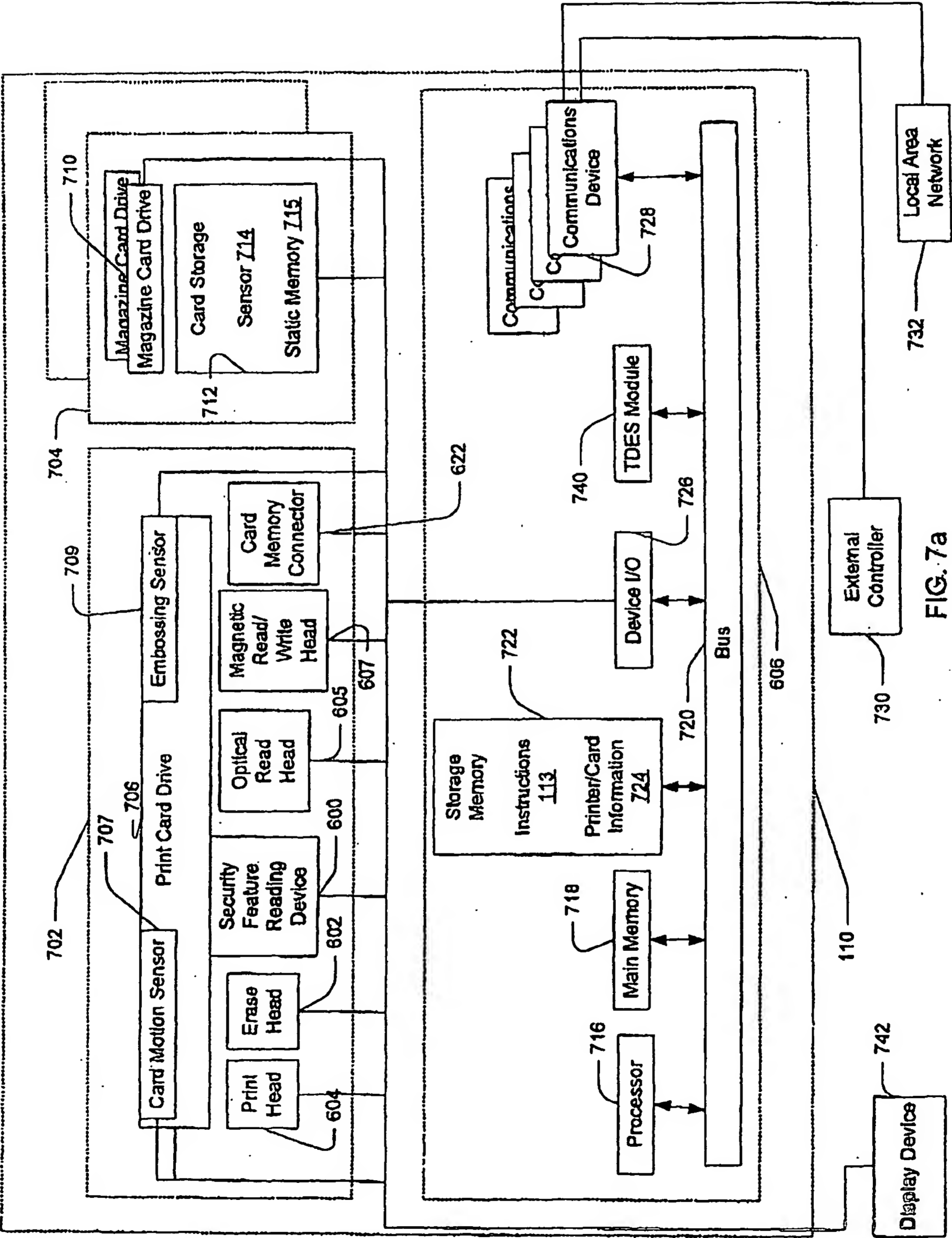


FIG. 7a

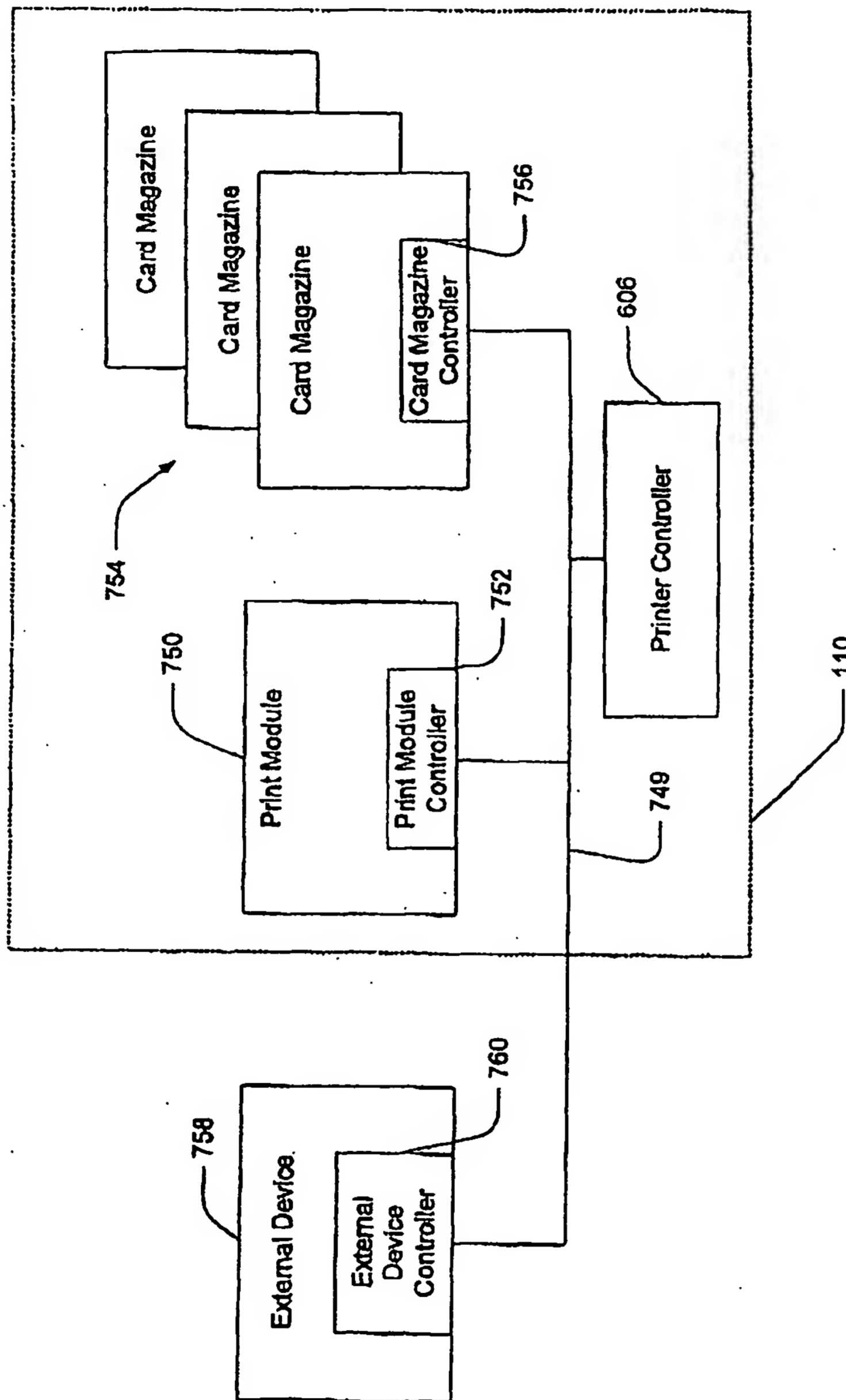
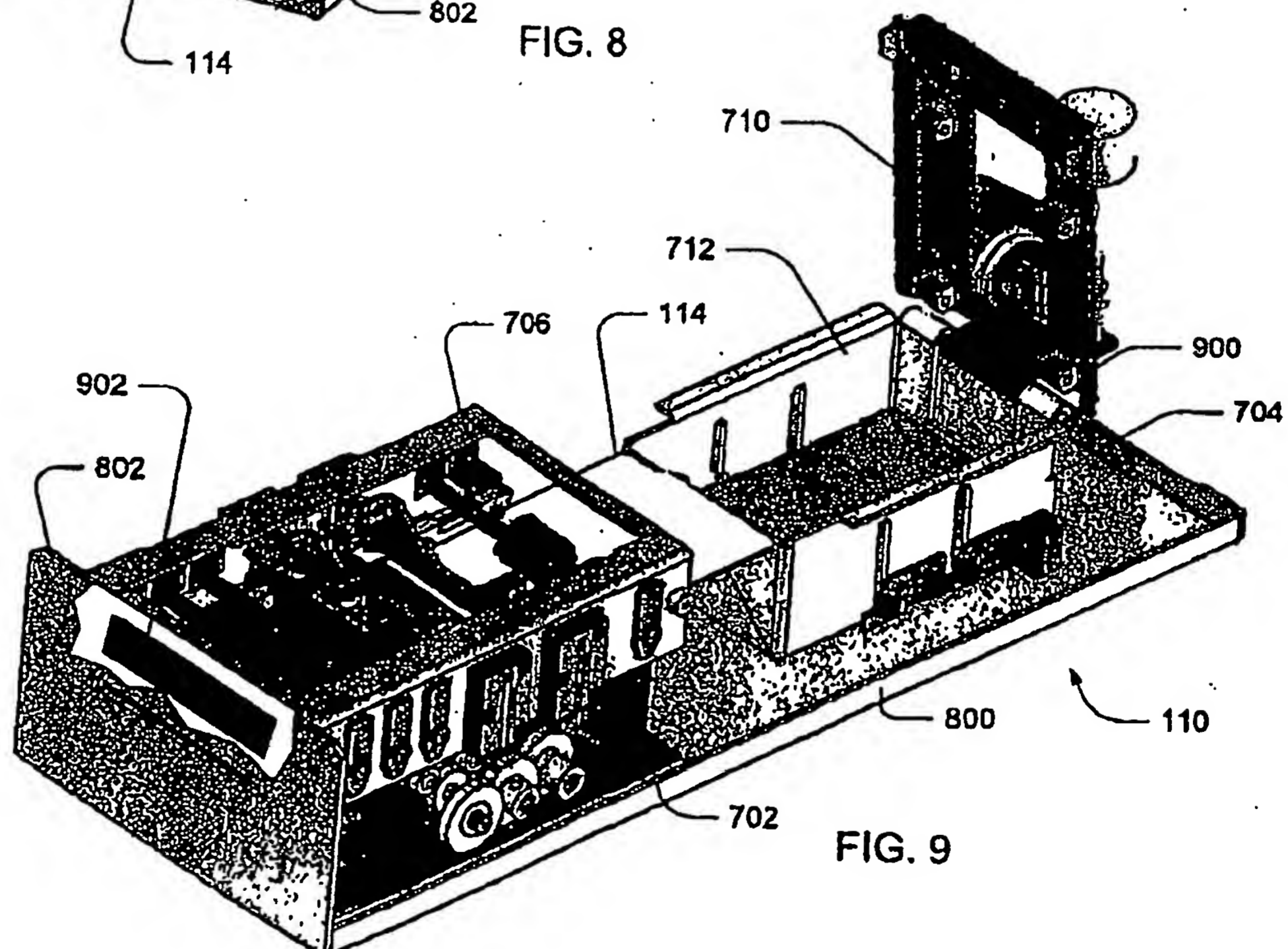
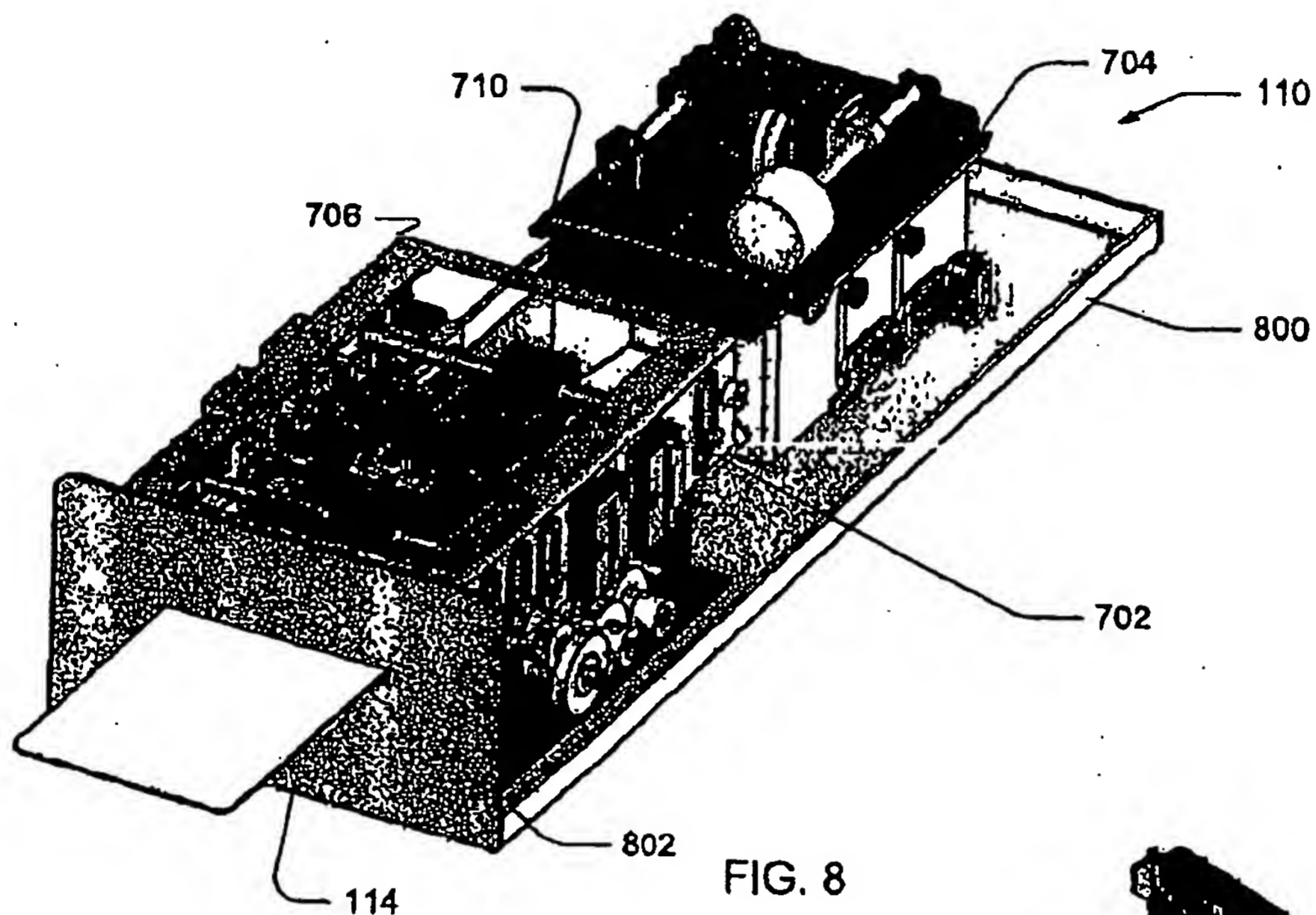
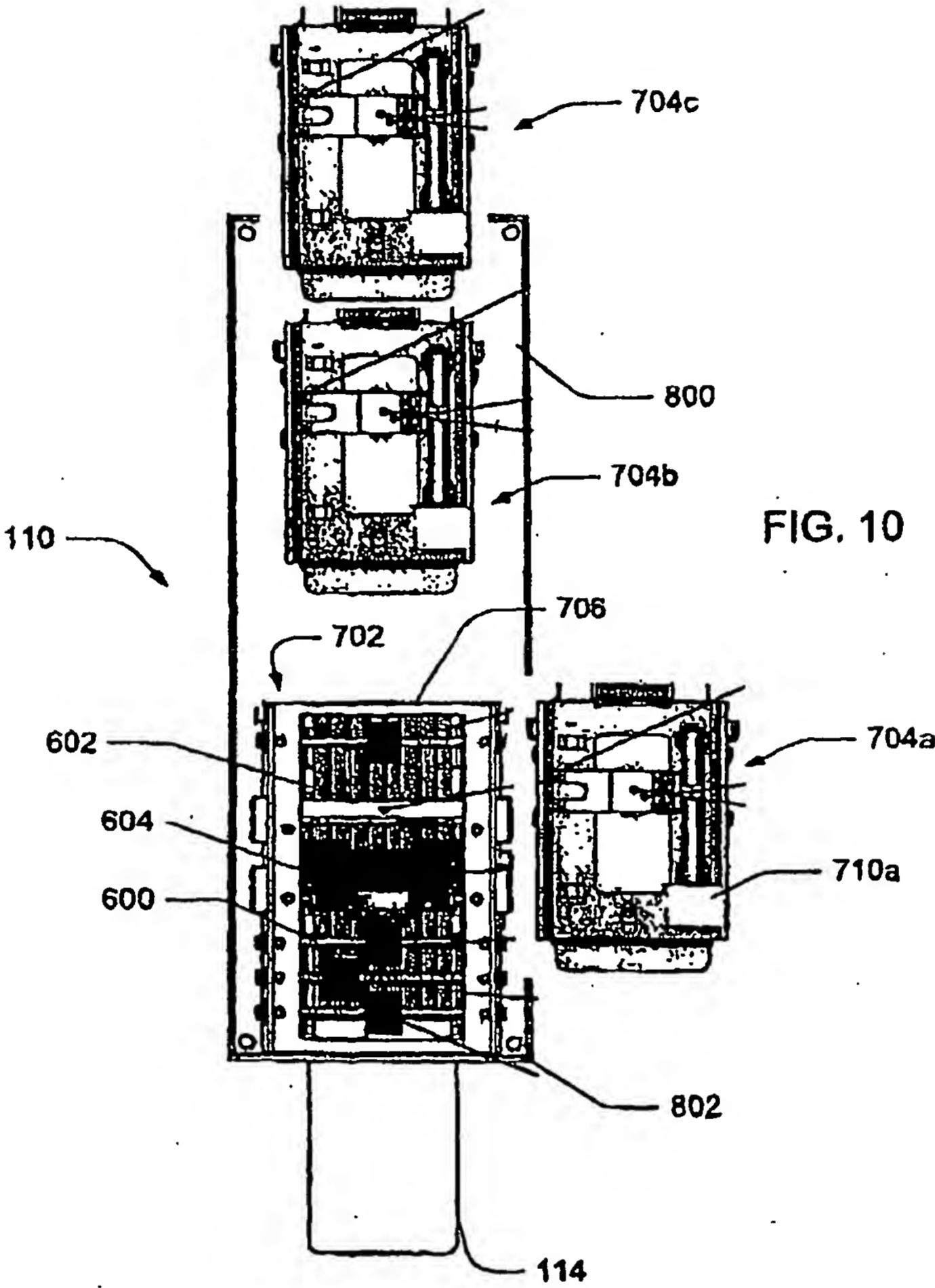
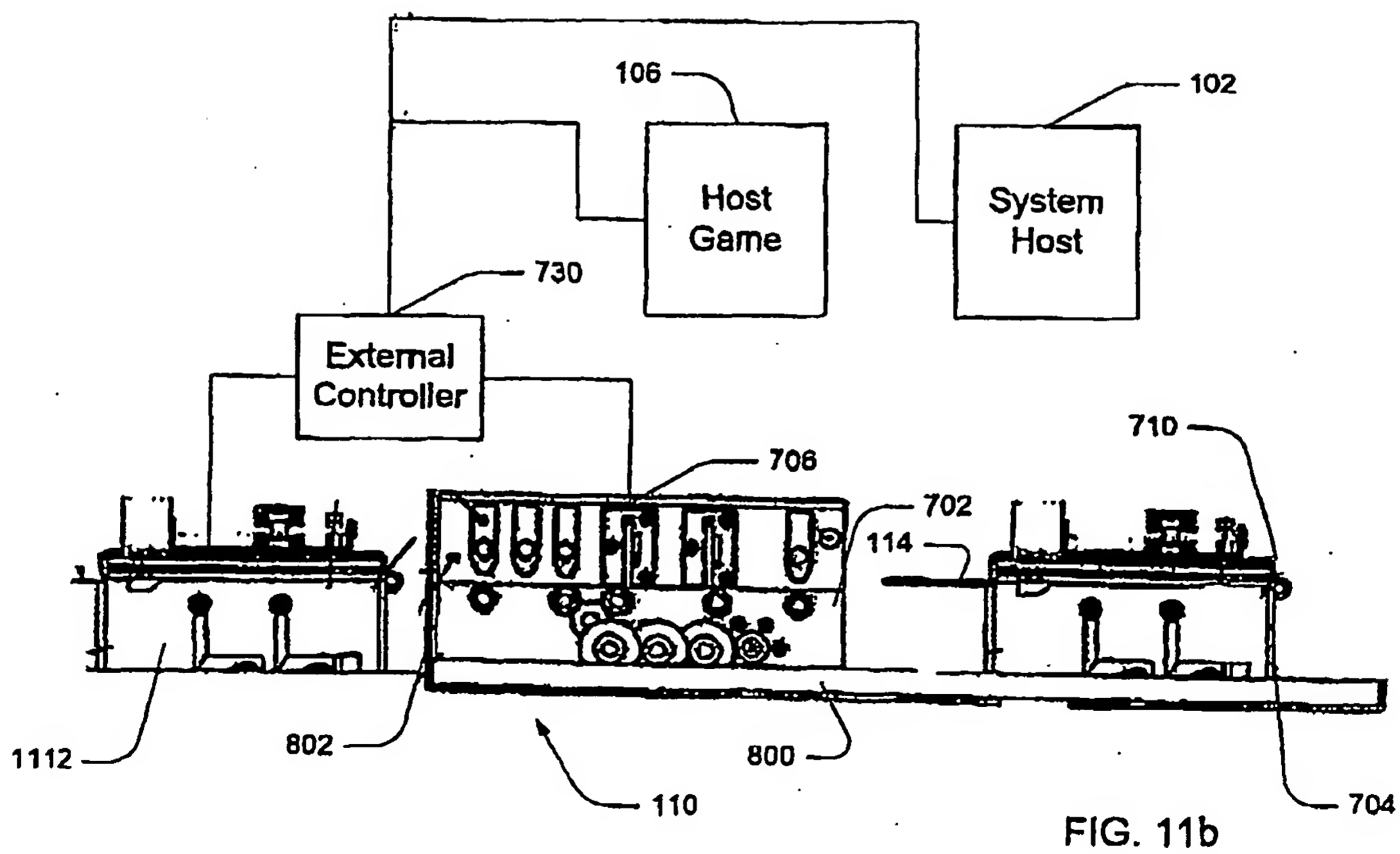
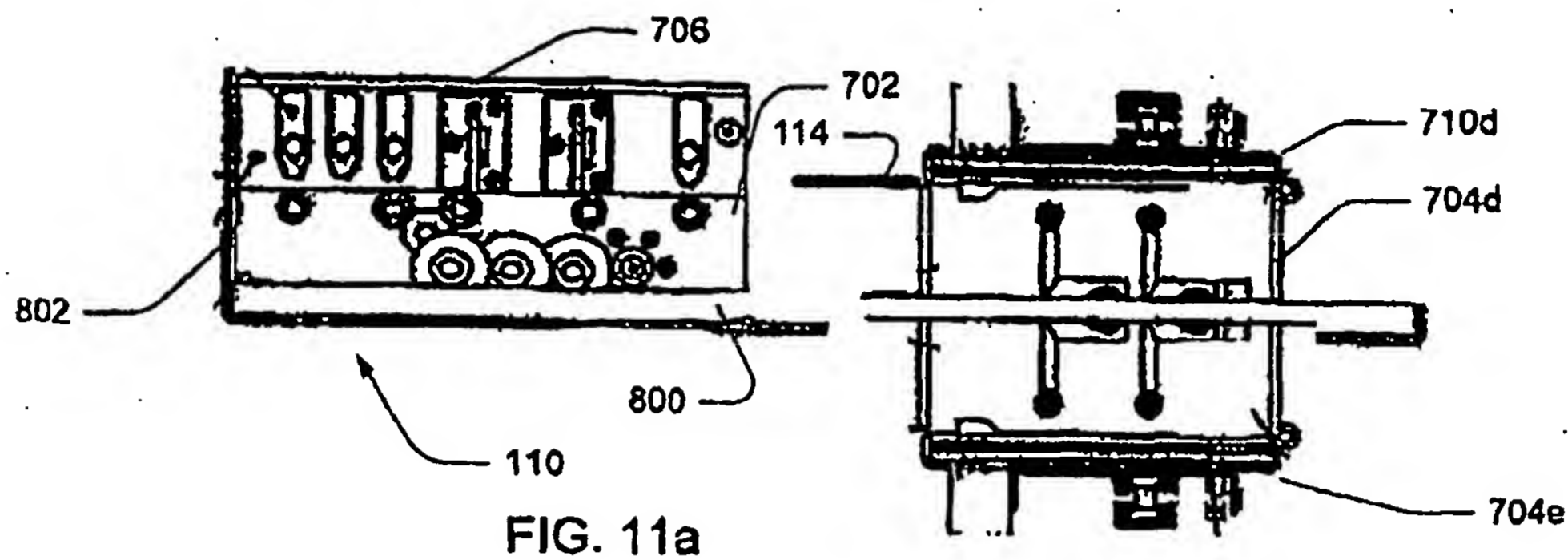


FIG. 7b







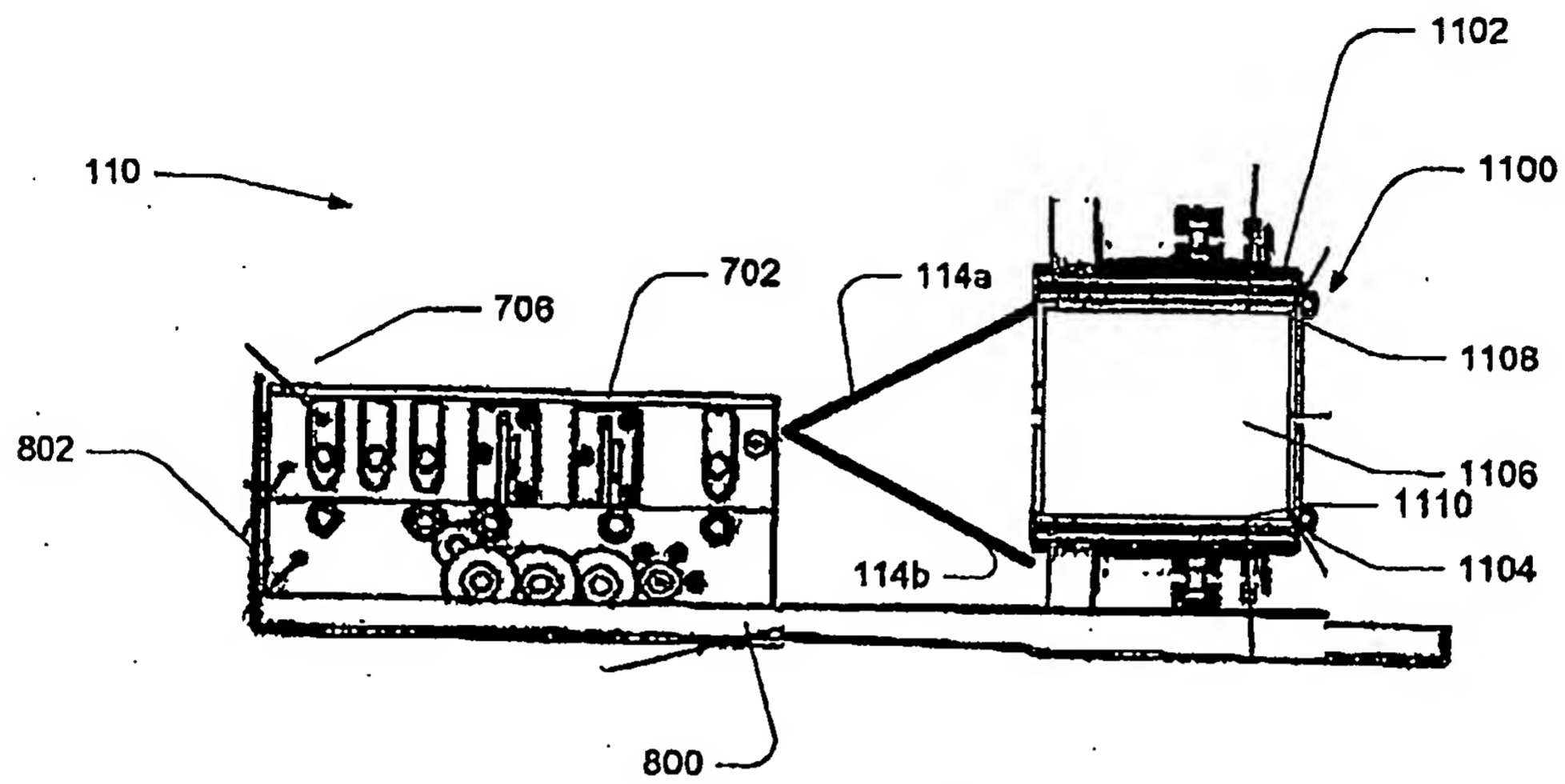


FIG. 11c

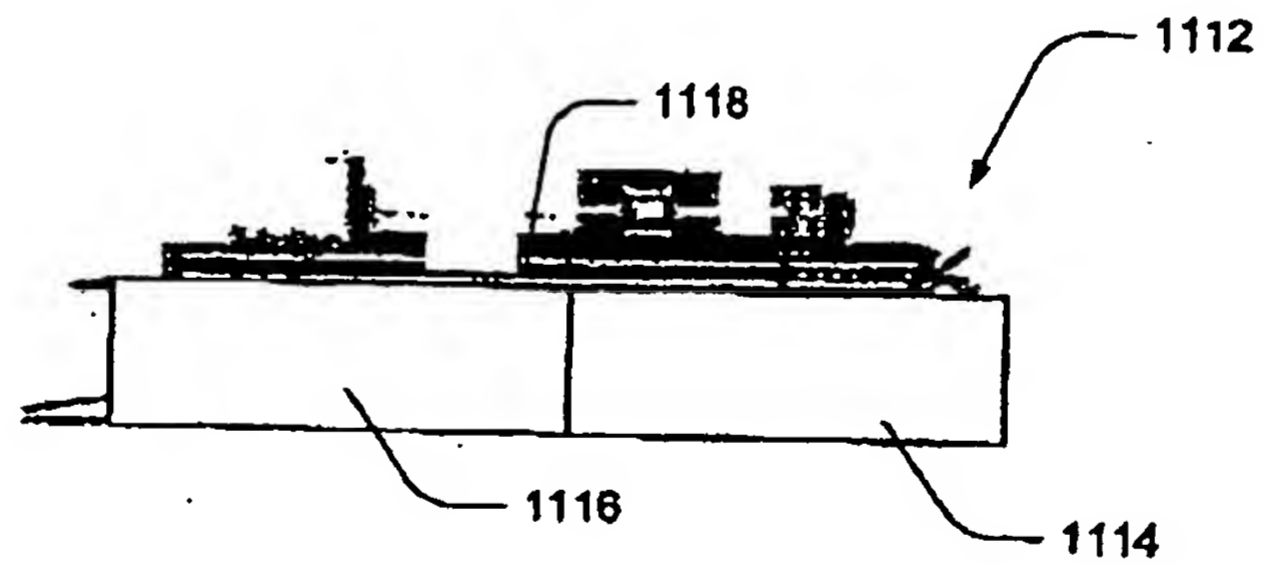


FIG. 11d

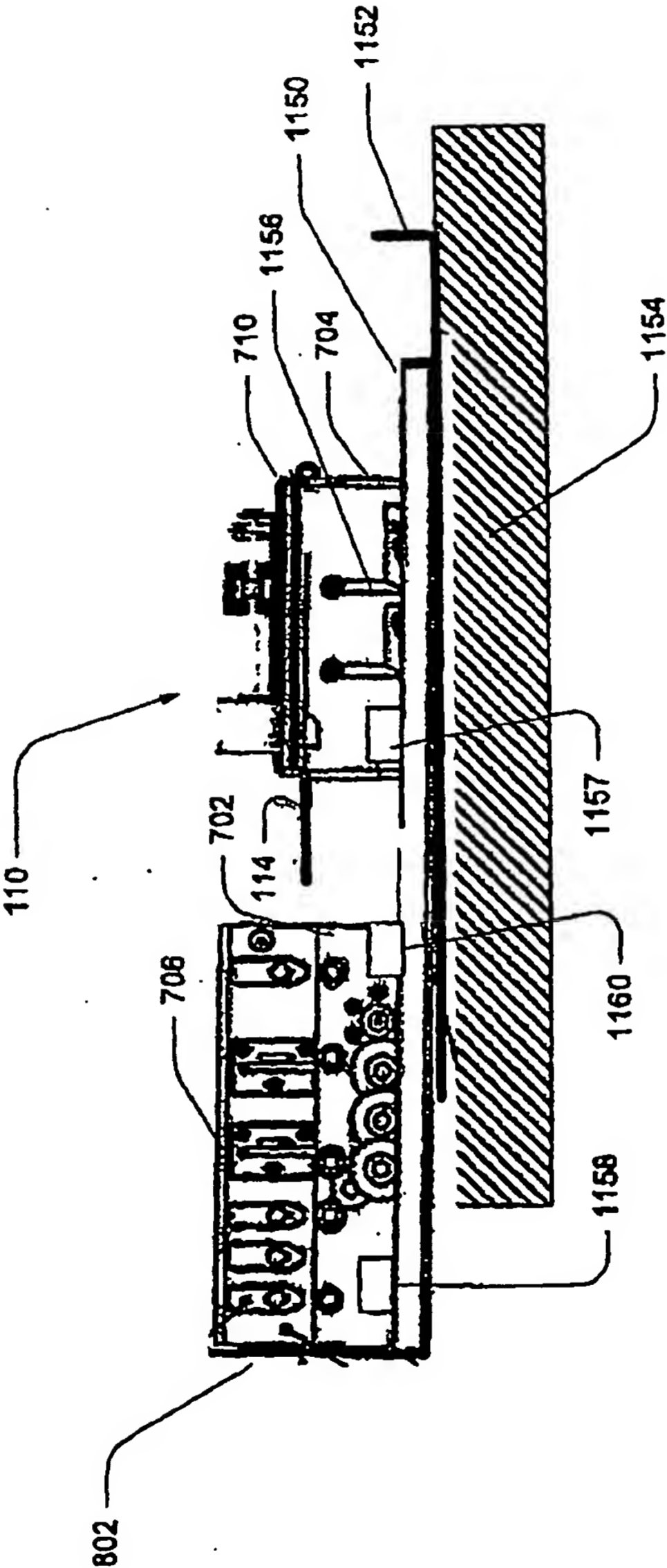


FIG. 11e

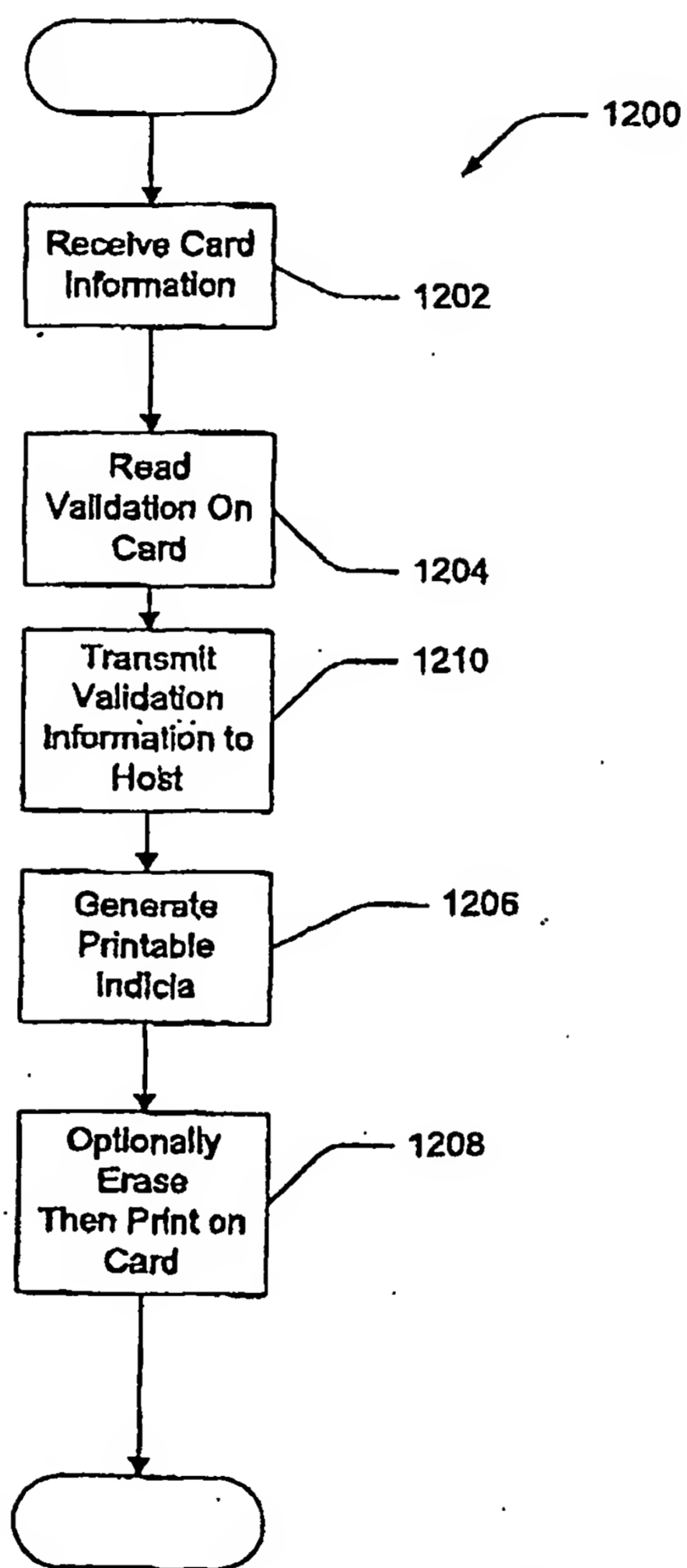


FIG. 12

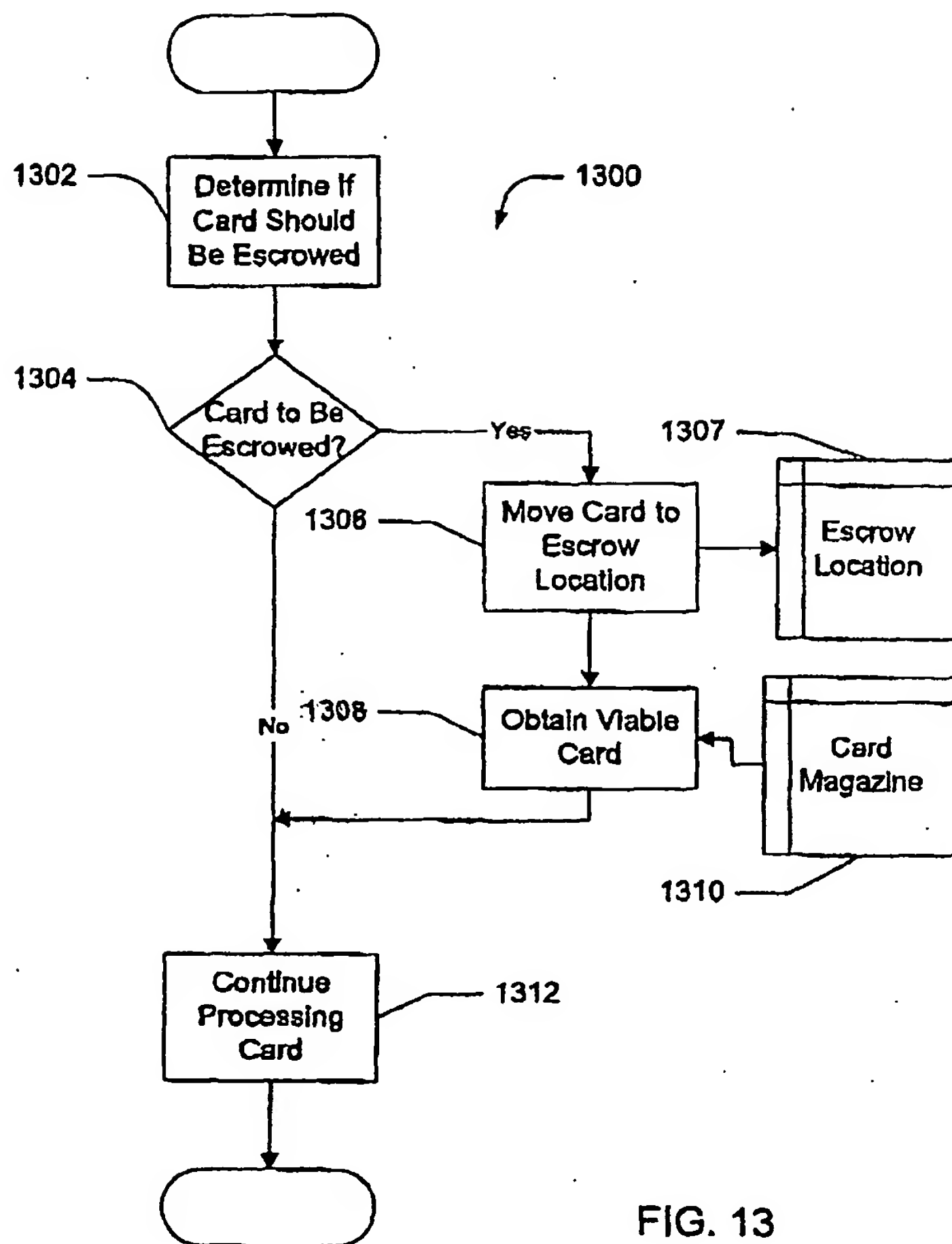


FIG. 13

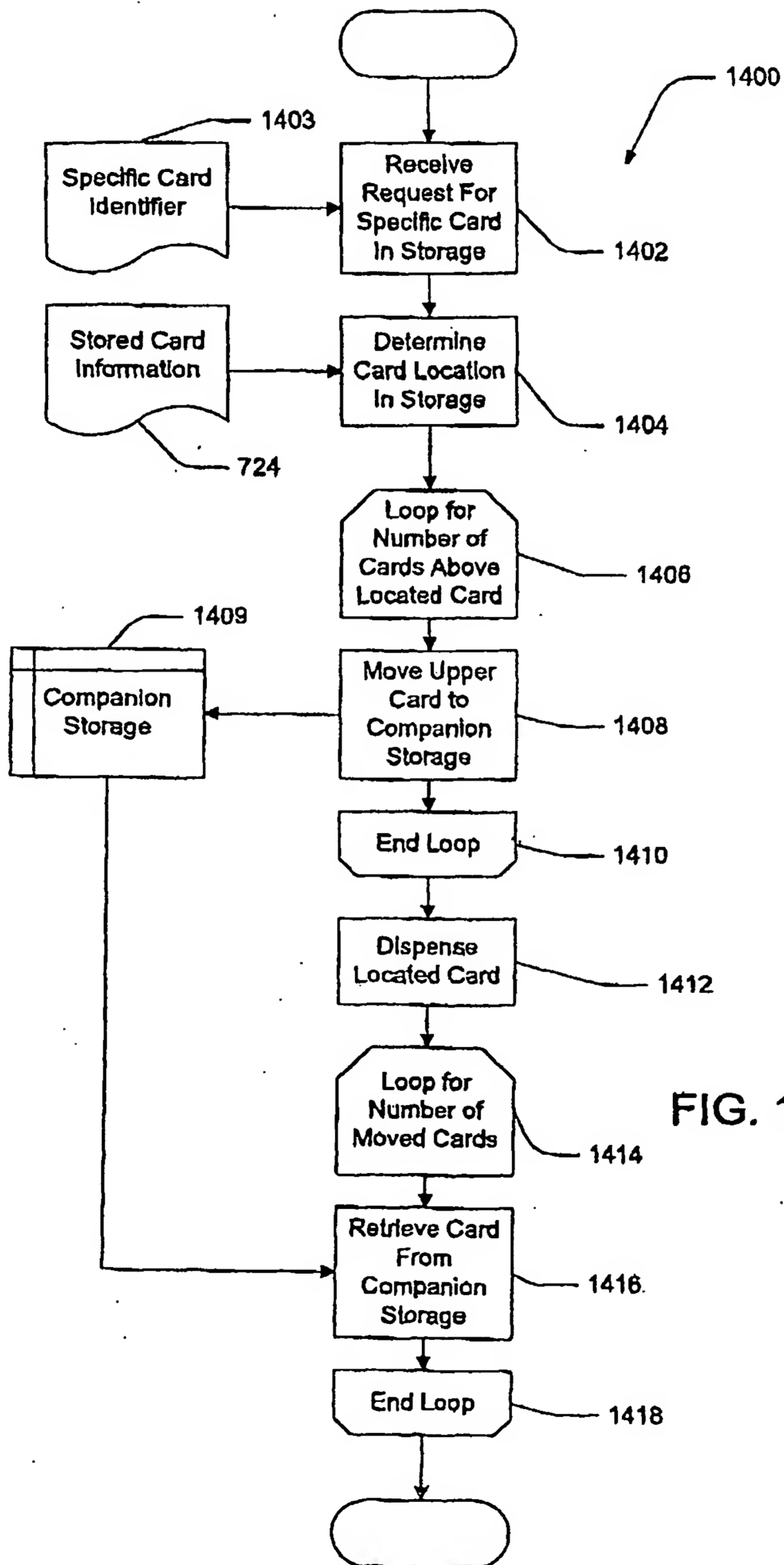
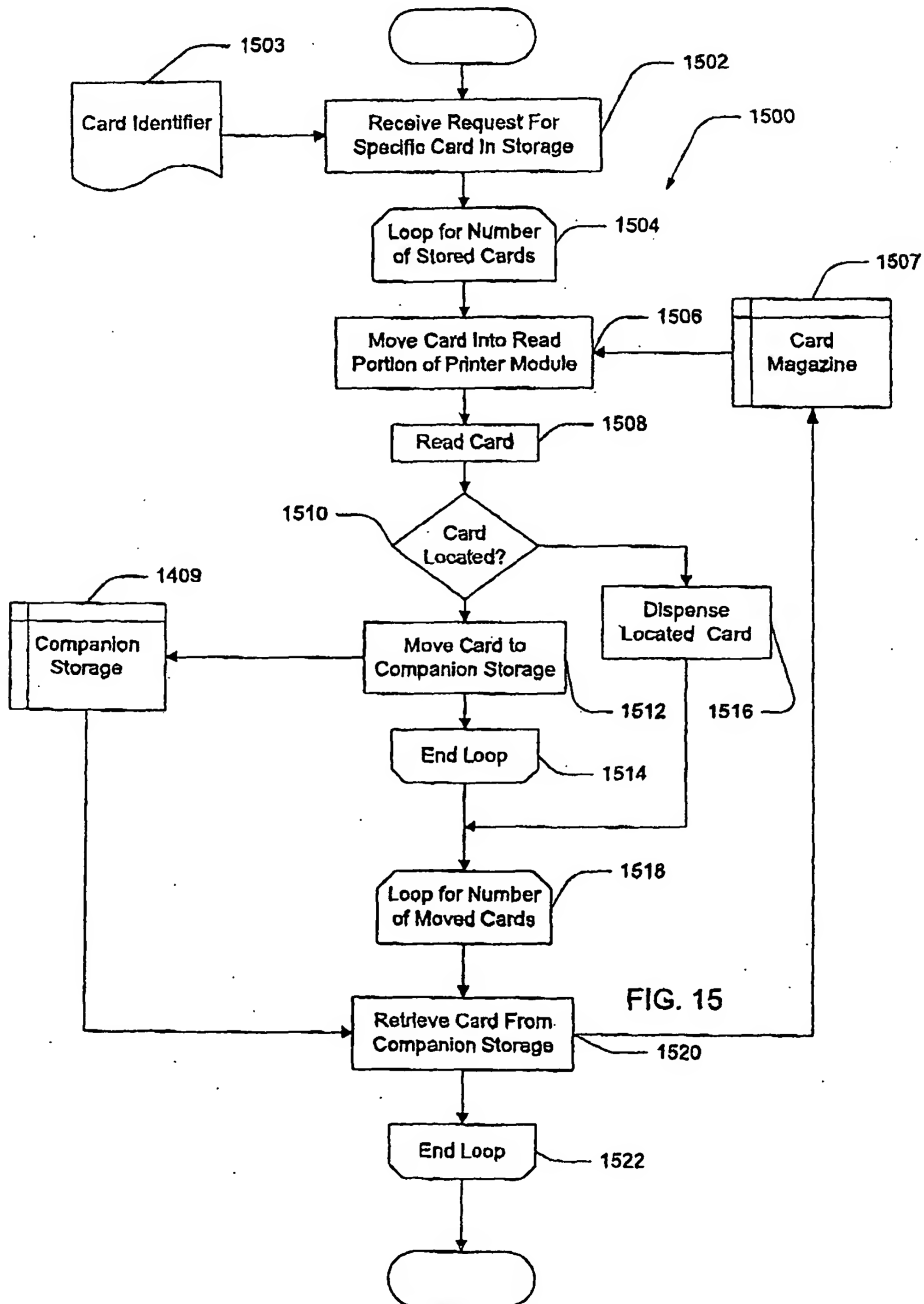


FIG. 14



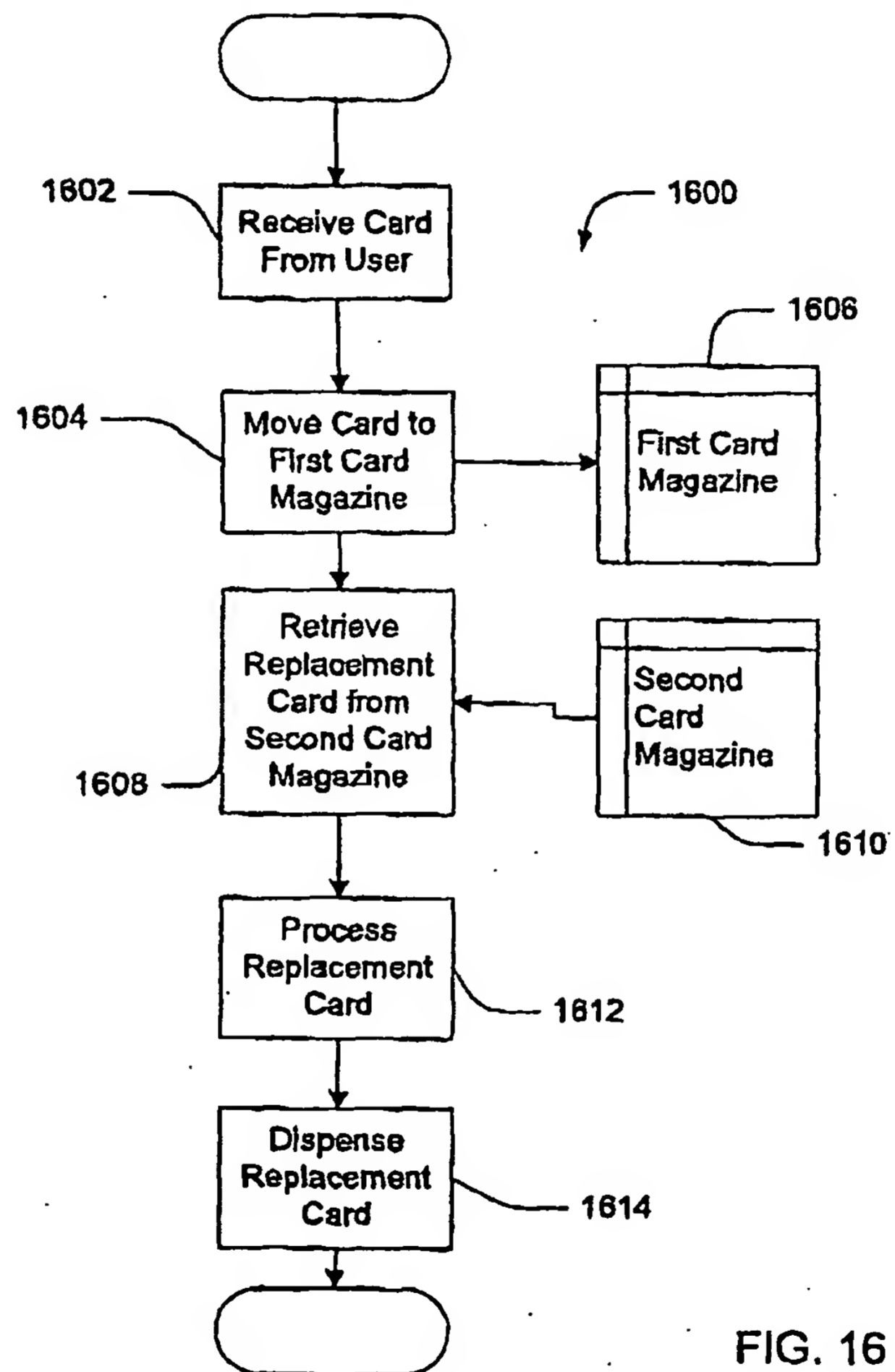


FIG. 16

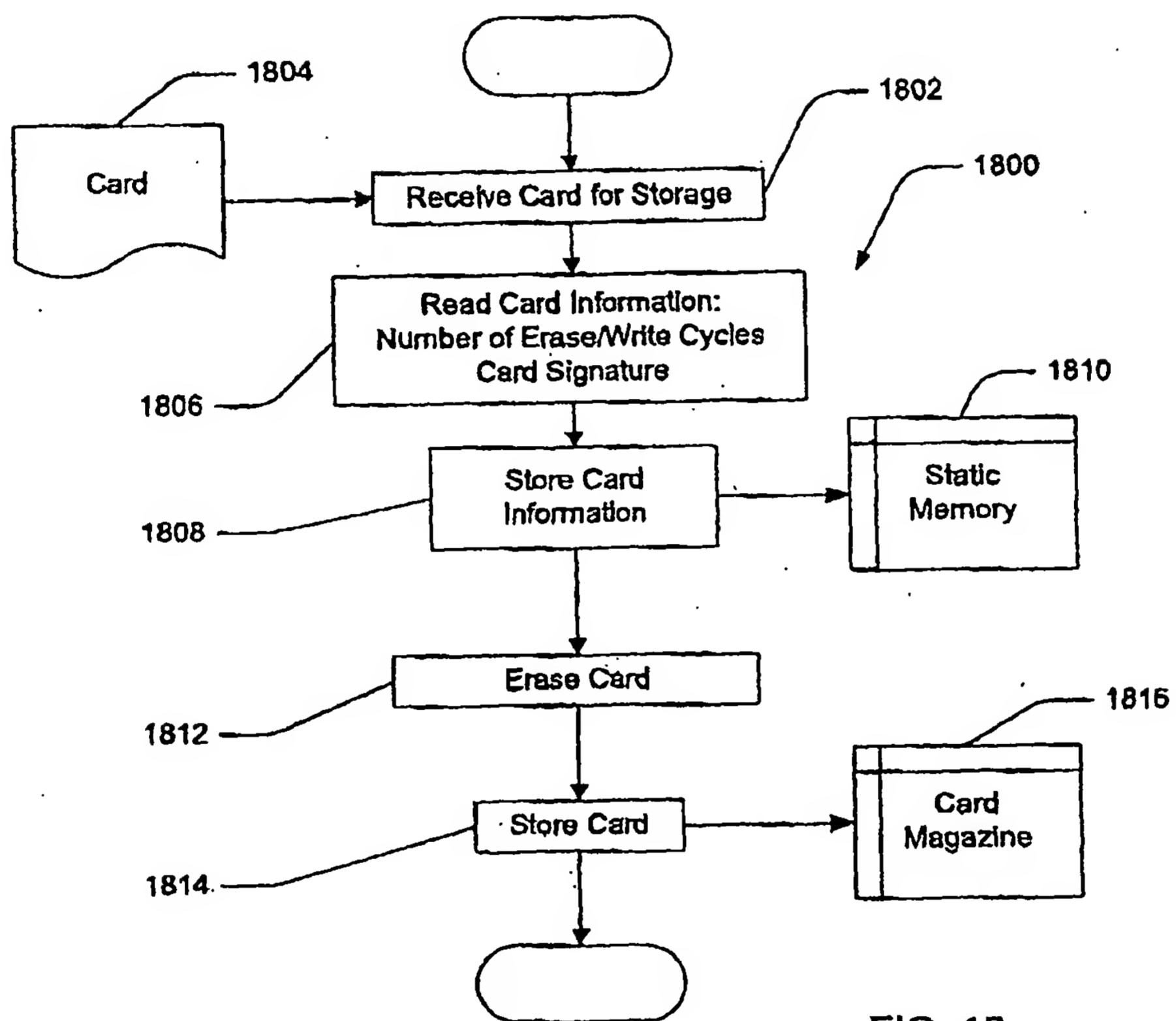


FIG. 18

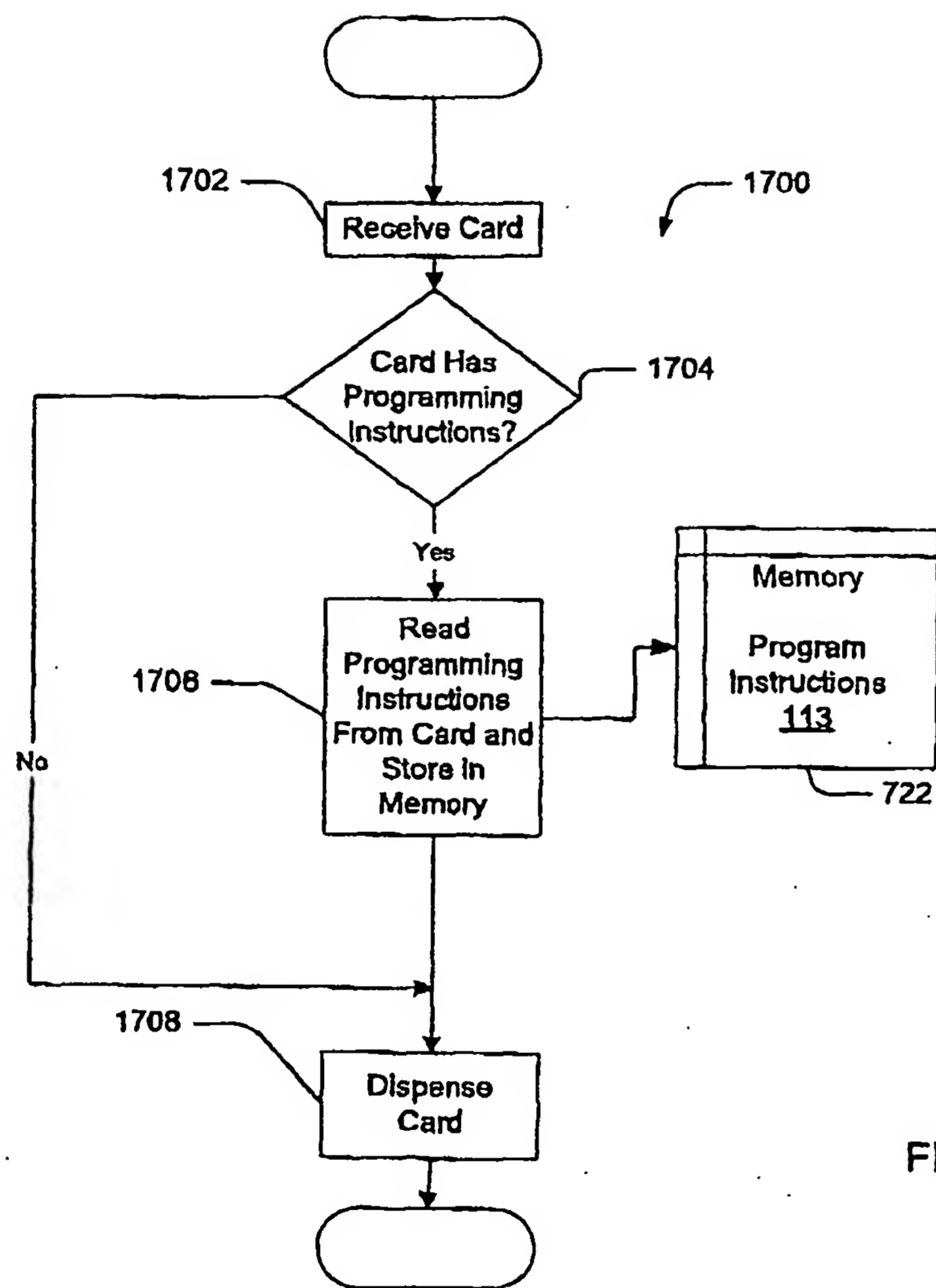


FIG. 17

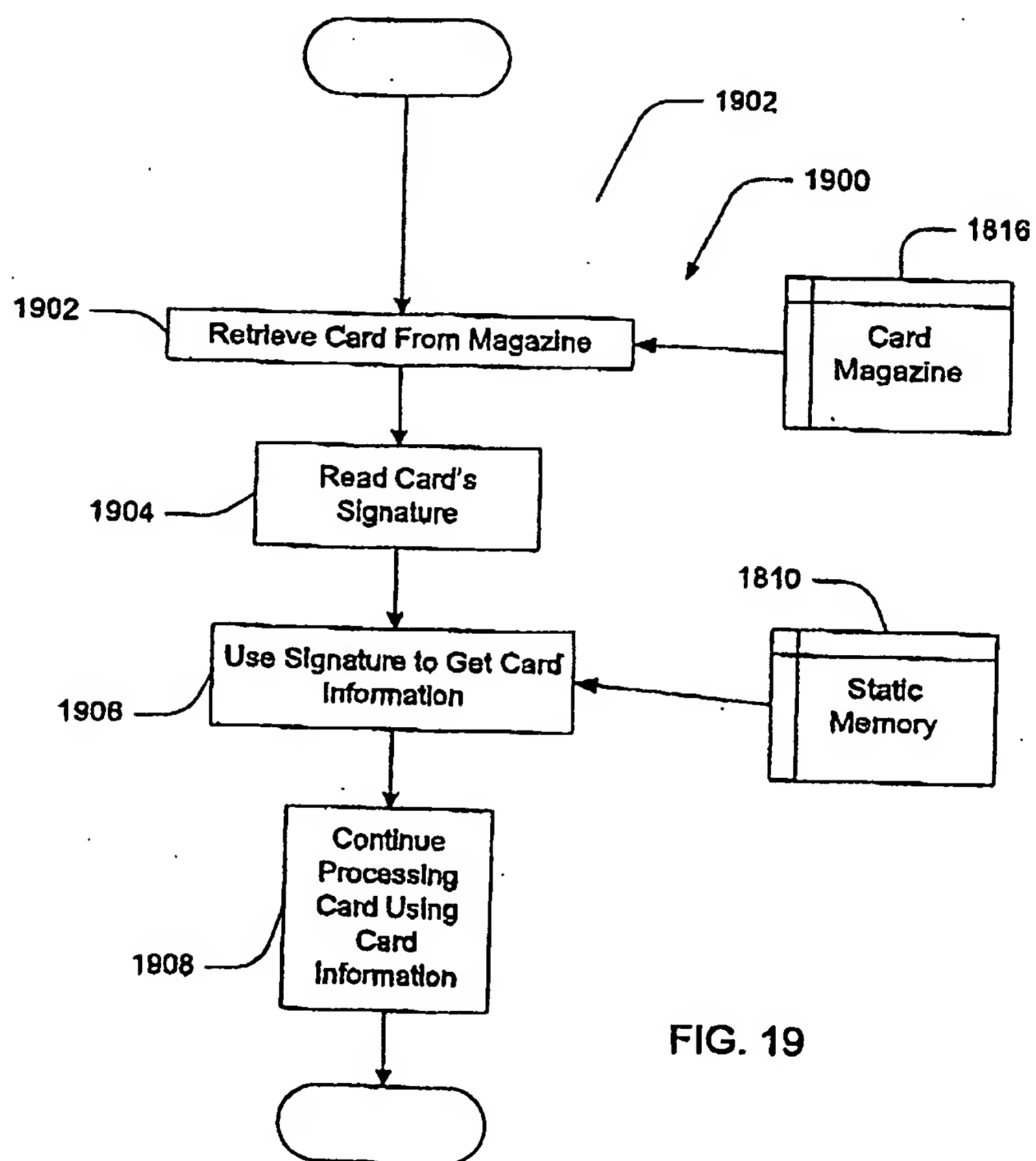


FIG. 19

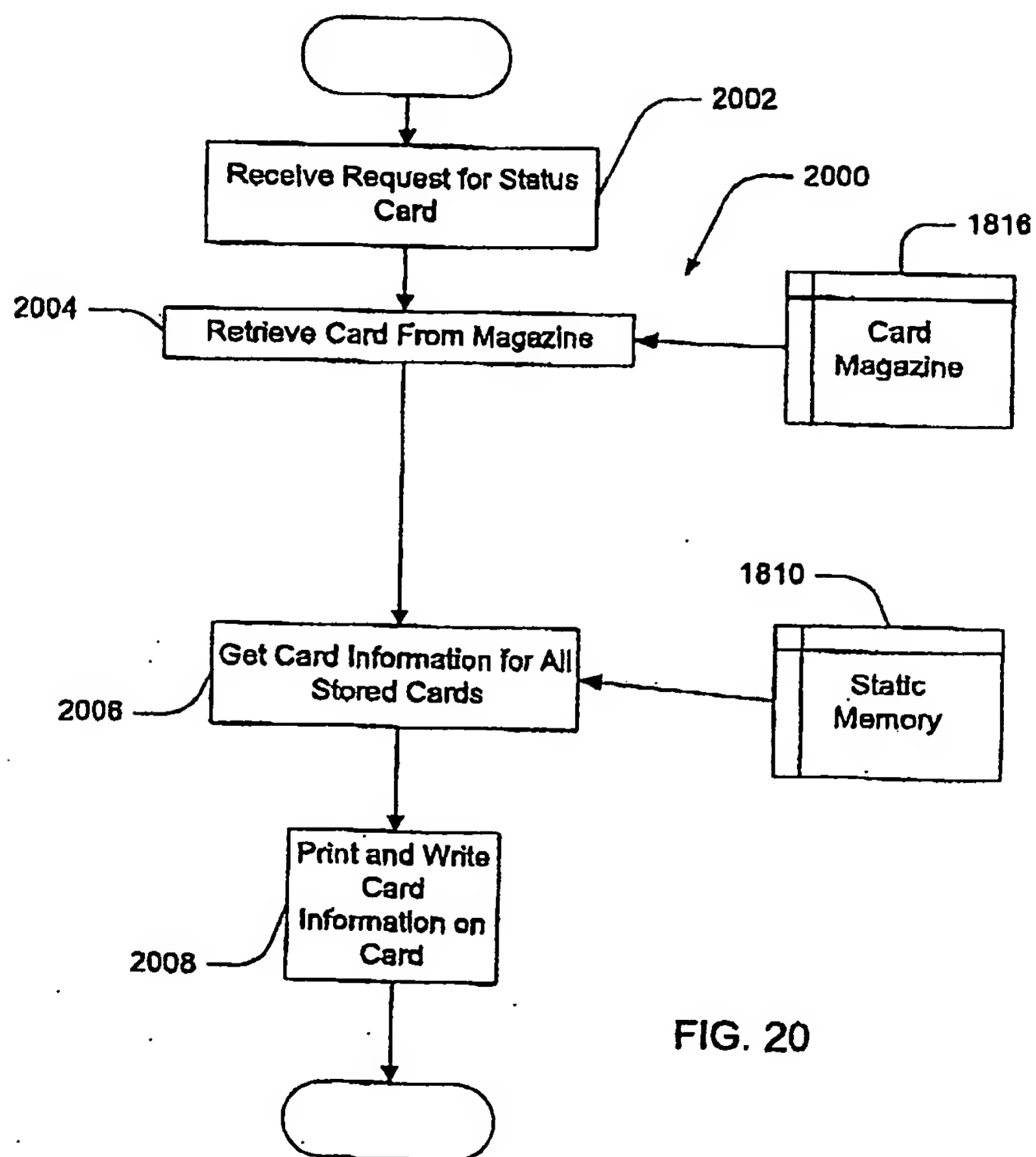
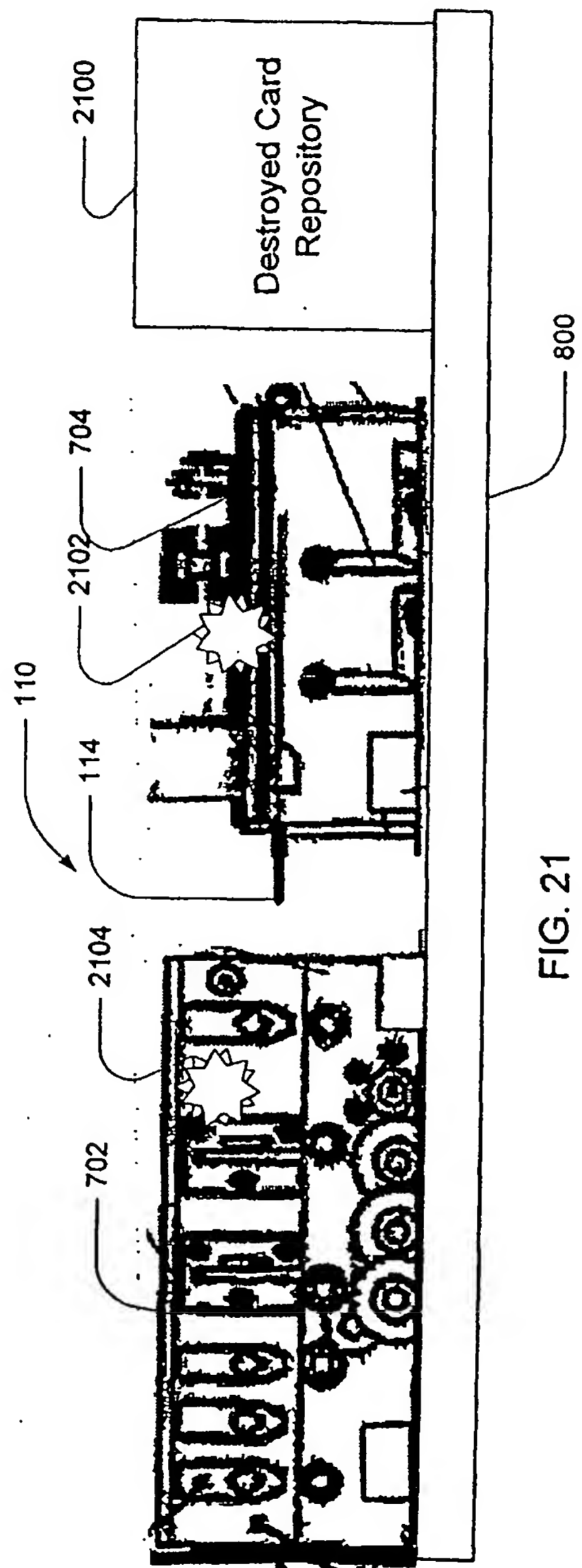


FIG. 20



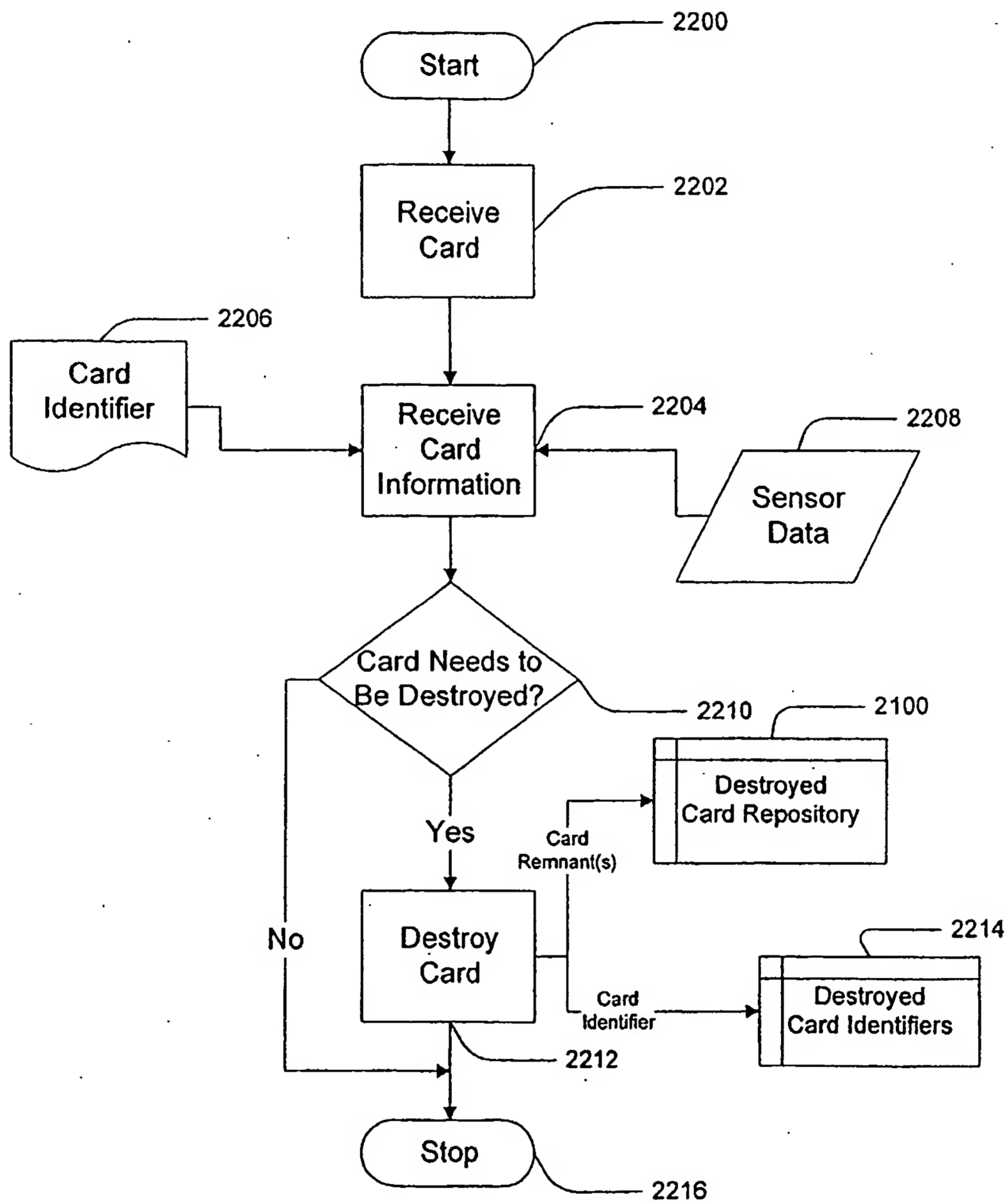


FIG. 22

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